American Aviation

MANAGEMENT
ENGINEERING
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EQUIPMENT

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JUNE 23

1952

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Trends

There's no apparent solution to avgas shortage, aggravated by recent strike. Airline and military flying is increasing, and avgas demands exceed supplies, even though production is double that of 18 months ago. Loss of Iran's output worsened situation. Strike effects were worldwide—it cost British European Airways $42,000 a day; KLM lost $4,400,000. U. S. lines' second quarter revenues will be hit.

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U. S. jet engine production is now 1,500 a month, is expected to reach 2,800 peak by 1954.

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Aircraft labor unions will push for pay boost if Wage Stabilization Board allows raises as rewards for increased productivity. WSB says its approval would make such boosts legal but not mandatory. However, in the past "legal" raises have always been included in labor agreements up for renewal.

•

Manufacturers face big cost increase if engineers are exempted from salary controls, as voted by Senate in amended Defense Production Act. Clause may be scrapped, however, when bill goes to conference with the House.

•

There's been impressive response to proposal for a sound aircraft manufacturing program by Roy T. Hurley, president of Curtiss-Wright Corp. In addition to leading the way in pushing for Government and Congressional support of industry's needs, Hurley has stabilized C-W's organization following upheavals of several years ago.

•

Upsurge in turboprop development, hampered by engine problems, is expected now that all experimental planes using Allison engines are returning to the air (Douglas XA2D, North American XA2J, Convair XP5Y-1, Allison's Convair Turboliner). Last named is shifting from Muroc to Indianapolis, where flight program will go into high gear.

•

From now on, CAB won't vote in Air Coordinating Committee on any matter that may require subsequent hearing and vote by all CAB members. On proposed statute-to-nautical mile change, one CAB member told ACC two years ago that the agency would approve; full Board turned it down this month (see page 32).

•

CAB is considering another domestic airline merger investigation, may announce it shortly.

•

A study of Federal aid to all forms of transport, to determine whether user charges should be imposed, is underway in the Commerce Department under Dr. Beatrice Aitchison, daughter of ICC Commissioner Clyde Aitchison. The study, which will take many months to complete, includes government money spent on airways and airports.

The Washington View

Speaking of Subsidies . . .

With the House Interstate and Foreign Commerce Committee preparing to decide this week which subsidy separation bill it would report out, much thought in Washington was being focused on the amount of money the nation's airlines receive in the form of subsidies. One estimate of the $117 million paid out by the Post Office to Airlines in 1951 says about $35 million actually covered the cost of transporting mail and the rest was a subsidy.

Even if this $82 million figure for subsidies is correct (and there are many who will insist it is far too high), the fact remains that it is relatively small per airline compared to some other subsidies the Government authorizes each year.

The Merchant Marine Act of 1936, for example, authorizes the payment of construction subsidies for passenger vessels. Under its provisions, three of the newest U. S. liners, the S.S. Constitution, the S.S. Independence, and the S.S. United States, have been sold to two steamship lines for a total of $65 million less than the actual cost of construction.

The Constitution and Independence, which cost a total of $47 million to build, were purchased by American Export Lines for $24 million. And the United States Lines was scheduled to take over the $70 million United States for $28 million this week. Not all of the price differential consisted of subsidies, however; some represents the cost of national defense features built into the vessels.

Made In Europe

An announcement by the Mutual Security Agency that this country is now ready to buy complete aircraft in Europe (see Newsletter, page 4) will mean that U. S. plane builders will receive fewer Air Force and Navy contracts than they had figured on. MSA has been fighting the military for many months, trying to convince the generals and admirals that contracts for complete planes must be placed in Europe to help alleviate the shortage of dollars there.

Until now the Pentagon has successfully resisted MSA pressures, even though this country did place orders with European aircraft companies for parts production and for maintenance and overhaul. And the decision may not have been made even now, despite the MSA statement. The Air Force would not comment on the announcement, which may indicate that a behind-the scenes battle is still going on.

'Crash' Priorities Reappear

It is now definite that the aircraft industry will not be plagued by a shortage of steel, even if the walkout by the CIO-Steelworkers continues. For the first time since the war, certain ratings for obtaining first call on steel, copper and aluminum, including the A-1 rating assigned to plane and engine producers, have been given "crash" priorities. In other words, the holder of an A-1 rating can "bump" the orders of other manufacturers off a steel firm's order book.

The new National Production Authority edict applies to about 30 steel companies which are still in production. These firms produce about 12½% of normal steel output. Furthermore, the Steelworkers and the struck steel companies have agreed to reopen some mills to maintain enough production to take care of Korean war needs.

The Dangerous Stretch

There are many, both in and out of government, who feel that the decision to stretch out the build-up of the Air Force until mid-1957 constitutes what may turn out to be a fatal mistake for this country.

Among them are elder statesman Bernard Baruch and Chairman Lyndon B. Johnson (D., Tex.), of the Senate Preparedness Subcommittee. Both are on record as saying that the U. S. should immediately change its plans and return to the original mid-1954 target date for attainment of the 143 wings.

Undoubtedly there are many in the Air Force who privately agree with Baruch and Johnson but who have accepted the political decision to stretch the program. Unfortunately, however, economics is not the sole factor to be considered.

There is no doubt that a reversal of the stretch-out would cost many additional billions of dollars. A reversal would also create some havoc within the civilian economy in the battle for steel, copper, and aluminum to produce civilian durable goods.

On the other hand, most Americans, we think, would rather postpone receipt of a refrigerator or washing machine to insure remaining free. More refrigerators can be built after the Russian threat is met. But the loss of Liberty would be a lot more difficult to regain.

. . . Robert M. Loebelson

Sure footing for the "*Cutlass*"

(Photo courtesy U.S. Navy)

First-line U.S. Navy shipboard jet, the Chance Vought "CUTLASS" relies on Goodyear landing equipment for safe, sure stops.

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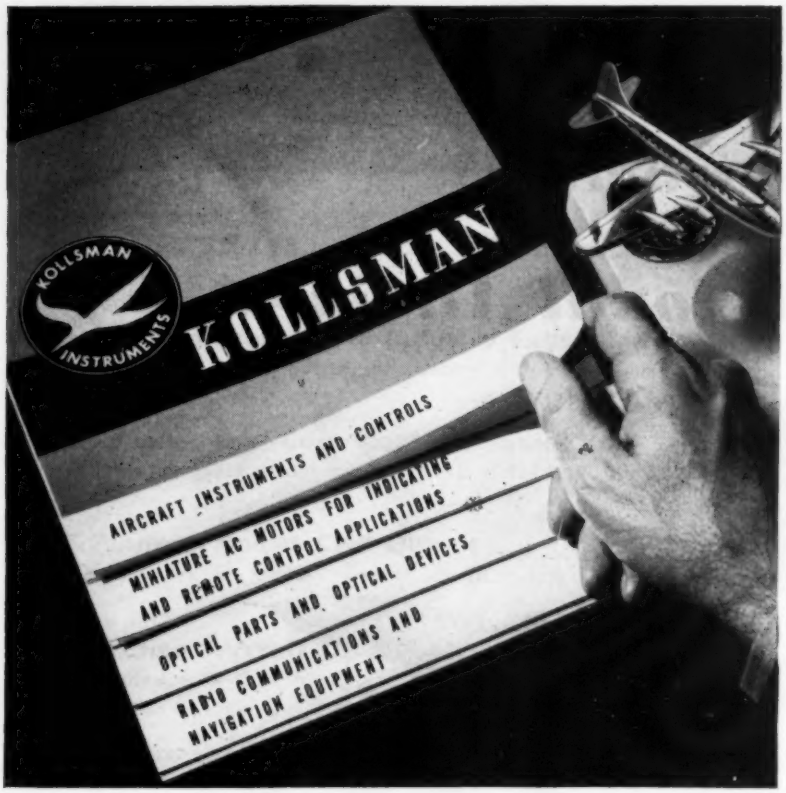

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When & Where

June 23-27—ASME, Oil & Gas Power Annual Conference & Exhibit, Hotel Statler, Buffalo, N. Y.

June 23-27—American Society for Testing Materials, 50th Anniversary Meeting, Statler and New Yorker Hotels, New York.

June 24—Air Transport Association, Board of Directors Meeting, Carlton Hotel, Washington, D. C.

June 24-26—Ignition & Engine Analyzer Conference, sponsored by Scintilla Magneto Div., Bendix Aviation Corp., Lake Oquaga, Sidney, N. Y.

June 26-28—Institute of Navigation, Annual Meeting, Sir Francis Drake Hotel, San Francisco, Calif.

June 29—Dedication of Terminal Building, Baer Field, Fort Wayne, Ind.

July 1-3—American Meteorology Society, National Meeting, incl. joint session with IAS, Statler Hotel, Buffalo, N. Y.

July 4-9—All Women's Transcontinental Air Race, Santa Ana, Calif., to Teterboro, N. J.

July 8-12—Aviation Writers Association, Annual Convention, Ambassador Hotel, Los Angeles.

July 10-12—National Assn. of State Aviation Officials, Summer Board Meeting, Alpine Rose Lodge, Salt Lake City, Utah.

July 14—Corporation Aircraft Owners Assn., St. Louis Division, Regional Air Safety Forum, Kratz Airport, St. Louis, Mo.

July 16-18—Institute of the Aeronautical Sciences, Annual Summer Meeting, Los Angeles.

International

July..—International Soaring Championships, Madrid, Spain.

Aug. 19—ICAO, Aeronautical Information Services (AIS), 1st Session, Montreal.

Aug. 20-28—8th Int'l Congress on Theoretical & Applied Mechanics, Istanbul.

Sept. 2-5—Society of British Aircraft Constructors, Annual Display, Farnborough, England.

Sept. 15-19—IATA, Eighth Annual General Meeting, Geneva.

Sept. 16—ICAO, Statistics Division (STA), 2nd Session, Montreal.

Letters

Letters should be addressed to The Editor, American Aviation Magazine, 1025 Vermont Ave., N.W., Washington 5, D. C. Anonymous letters will not be printed, but names will be withheld upon request.

HOMER, LINDBERGH, ALCOCK & BROWN

To the Editor:

In your issue of May 26, 1952, you have an item on Page 17 entitled "Start of an Era." This refers to Lindbergh's non-stop solo flight from Roosevelt Field to Paris 25 years ago.

You say "The flight marked the start of the multi-million dollar business that carried more than 300,000 people across the ocean in 1950."

I'm afraid there will be some sad shaking of heads when this news reaches the bar of the Royal Aero Club in London. For there is a photograph there of two British characters called Alcock and Brown, and up to now the Committee of the Club have had the idea that it was these two gentlemen who started some sort of era when they made the first non-stop direct Atlantic crossing from Newfoundland to Ireland on June 14/15, 1919, eight years earlier than Lindbergh.

But you're in good company. Even *Life* left them out. *Aliquando bonus dormitat Homerus.*

CHRISTOPHER CLARKSON
Former British Civil Air Attache in Washington.

(Errare humanum est, *although we might also say,* magna est veritas, et praevalebit. *To be sure, there were trans-Atlantic crossings before Lindbergh, but there is good reason to mark the Lindbergh flight as the real start of the over-ocean business because it attracted much more attention than any other such flight.*

Since we had to dig up a translation of Mr. Clarkson's Latin phrase, we might as well pass it on to our readers who, like us, didn't put Latin as a No. 1 project in school. It means "Even the good Homer sometimes nods." So we replied "To err is human" and "Truth is mighty, and will prevail," and we aren't saying where we finally found them.—Ed.)

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HAPPY BIRTHDAY

To The Editor:

Our sincere congratulations on the 15th anniversary of AMERICAN AVIATION PUBLICATIONS. I particularly enjoyed the 15th anniversary souvenir issue (of the AMERICAN AVIATION DAILY).

It certainly was of great interest to read some of the history that does not seem too long ago in one way and which seems like many years in another.

I hope that your next 15 years will be equally successful.

LADDIE HAMILTON
President
Ozark Air Lines
St. Louis, Mo.

CONGRESSIONAL CHARGES

To the Editor:

I would like to thank you for the comment under "The Washington View" with regard to Congressman O'Konski.

We often spend a good deal of time after some of these unfounded statements are made trying to straighten out the record. The corrections, or retractions, usually are in small type, whereas the charges are front-page news.

It certainly gives us comfort when someone like yourself takes up the cudgel and asks a few pointed questions.

The facts on the C-123B schedule are that it is a very tight schedule. A good many people in the Air Force doubt whether we will be able to make it. It looks to us like we will at the present time.

EDGAR F. KAISER
Kaiser-Frazer Corporation
Willow Run, Michigan

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AMEN

To the Editor:

Just last night my wife and I read your "Airline Commentary" in the June 9 issue, and we have this to say: AMEN!!

It was indeed like a shot in the arm to read such a letter from someone who had the boldness to speak up and tell the world about the tribulations of the intermediate station and its personnel. As I see it he covered the field pretty well.

Far be it from me to try to add to the splendid job done by another, but let's add a few more things that the manager of a small station has to think about. Some of them board commissary. Usually, the station manager has to make all the public relations speeches and contacts, follows up leads from the DSM, interviews prospective employees before sending them on to the personnel manager at the GO. He probably has a far better "bird's eye view" of over-all airline operation than any other employee, is frequently asked for his views on matters, but seldom gets his way. He shovels the snow from the ramp, drains away the water during thaws and rains. He dreams up an occasional publicity stunt, and works with travel agents in his area.

Although there is a host of other things he attends to in the daily turn of events, that should suffice to give one the impression that the local airline representative is a very busy fellow.

CARL GONDER
Station Manager
Western Air Lines
Scottsbluff, Nebraska

•

SALA'S INTERIORS

To The Editor:

With reference to your comment in the May 26 issue in "En Route," about the attractive interior of AVENSA's DC-3, may I suggest that Servicio Aereo Latino-Americano, S. A. (SALA), which did the work in Costa Rica, might be a good subject for an article.

SALA is affiliated with, and does all the maintenance for, Compania TACA de Costa Rica. It also does overhaul and conversions for other airlines and private owners in Central and South America, Mexico, and the United States.

I'm somewhat familiar with the work of SALA through acquaintance of several years with Capt. Robert E. Anson, operations manager of Compania TACA de Costa Rica, who is also one of the owners and executives of SALA. I've seen their shops at San Jose, and was most favorably impressed with their set-up and examples of their work. TACA DC-3's also had very attractive interiors and incorporated several unusual features designed by SALA.

C. E. MANSCHOTT, JR.
Manager, Rates & Tariffs
Capital Airlines
Washington, D. C.

•

Obituaries

ALBERT A. MERRILL

Albert A. Merrill, 77, one of the world's first aeronautical scientists, died at his home in Pasadena on June 4 after a long illness.

Professor Merrill delivered his first aviation lecture in 1892 and was taught to fly by the Wright Brothers in 1911. He invented the system of lateral control using both ailerons pulled at one time and was the founder of the Boston Aeronautical Society.

After moving to Southern California, he became one of the early instructors at the California Institute of Technology and later headed Caltech's aeronautical department for several years. The Institute honored him in 1950 by naming its subsonic wind tunnel for him.

•

HARRY M. CHASE

Harry M. Chase, president of Harry M. Chase, Inc., which operates Executive Aircraft Service, died late in May in Denton, Texas.

Engaged in aviation for 23 years, Mr. Chase formed his company in 1946 and operated the Dallas Aero Service at Love Field in Dallas until 1951. At that time Executive Aircraft Service was formed at Garland Airport, also in Dallas.

Editorial

More Air Coach

IT IS CLEAR from the first quarter operating figures for the airlines (printed in detail in this issue) that the upward cost trend which we warned about a few months ago has taken hold firmly.

Since a great many additional seat miles are becoming available this year it would be very much in order for the airlines to reduce fares to keep the seats filled if it were not for the fact that the increase in costs began running ahead of the increase in revenues early this year.

by W. W. P.

Reduction of the standard fare is out of the question, which leaves but one alternative for keeping the additional seats filled. This is a very substantial expansion of high-density coach service which permits a reduction per seat mile despite an increase in over-all operating costs.

In addition to the first quarter operating figures the reader will find much additional food for thought in this issue. The CAB reports that coach services have continued to attract increased patronage, much more so than the regular-fare services. In some instances coach traffic has increased while regular-fare patronage has declined. This trend is not altogether unexpected, but it has perhaps been speeded up because of spotty business conditions throughout the country and the fact that people generally are looking for bargains or looking more closely at their own budgets.

There was a time a few years ago when broad expansion of coach service would have been premature. But the vast bulk of new equipment has now been delivered or will be delivered by the end of this year. At least there is no equipment shortage as there was a few years ago. It is time, economically, for the industry to make coach service available to more and more routes.

The domestic coach problem is quite distinct from the trans-Atlantic. Primarily it is a matter of distance. Coach travel is no hardship anywhere within the boundary of the U. S. and the lower fare makes it definitely preferable for a high percentage of the traveling public.

Air coach is on the way to becoming standard air travel while the first class service will, in turn, become the Pullman service of the air. In the face of increased operating costs, air coach provides the only means by which the individual fare can be kept low. And only low fares will keep the expanded commercial air fleet busy.

Fiasco

A prime example of how *not* to achieve world standardization in such things as measurement of speed and distance is afforded by the rather dramatic last-minute rejection by the CAB June 3 of the draft regulation which was to become effective July 1 adopting nautical miles in place of statute miles.

The chain of events in the world effort to standardize is long and complicated but the fact remains that the U. S. representatives on ICAO, the International Civil Aviation Organization, committed this country to going along with the rest of the world. Presumably these representatives had the full backing in this commitment from the Air Coordinating Committee.

But somebody forgot something, and fearless fighters such as J. B. Hartranft, Jr., general manager of the Aircraft Owners and Pilots Association, took pains to carry this neglect to the final point. This was that only the CAB can promulgate civil air regulations for the U. S.—and the CAB had never held a hearing on converting from statute to nautical miles. Hartranft won his point and the CAB by a 3-2 vote rejected the proposed regulation.

The whole confused situation is not only a fiasco of government handling but is a tragedy of errors. The airlines and others have spent a great deal of money getting ready for the change-over but they opposed the change and had not had a chance to speak up against it.

It is a sad lesson in statesmanship whereby one government coordinating agency through its representatives on a world body attempt to commit this country without the parties involved having anything to say. When the industry was notified of the change-over of July 1, the action was considered to be a completed fact. The commitment had been made. Thanks to Hartranft, however, due process and due consideration finally came into play.

Everybody will admit that standardization is worthwhile. The Air Force and the Navy changed over some time back. It would be fine if U. S. civil aviation would conform. But civil aviation ought to have something to say about it. Railroaded decisions are not in line with American procedures. And nobody at Montreal apparently raised the question of the world conforming to *our* units of measurement.

So despite the fact that the U. S. committed itself in ICAO to standardize with the world on July 1, we won't be doing it, at least for the present. Maybe somebody can now come up with a way in which civil aviation in the U. S. can have something to say about international commitments made for it without due process of hearings and consideration.

. . . WAYNE W. PARRISH

Engineered for Close Air Support

Lessons learned under fire in the fiercely fought battles of Korea have dictated the specifications for America's latest attack-type airplane—the AU-1 Corsair.

Retaining the basic design features of the famous F4U Corsair, the AU-1 is powered by a Pratt & Whitney R-2800 single-stage engine to gain the ultimate in low level performance. Extra armor plate has been added to protect pilots from ground fire, and numerous internal changes have been made.

Thus once again the basic Corsair design, first laid down in 1938, has shown its amazing capacity to be adapted for specialized tactics. In a dozen years of uninterrupted production, more than 12,000 Corsairs have been built. Six versions of this one airplane type have seen action in Korea.

Chance Vought Aircraft • DALLAS, TEXAS

ONE OF THE FOUR DIVISIONS OF UNITED AIRCRAFT CORPORATION

The Candidates and Air Power . . . Waiting for '57

THE CONVENTION of the Republican party in Chicago next month to select a presidential nominee does not sound like much of an aviation story, but actually it is, for the two leading candidates for the nomination represent widely divergent views on air power and should one of them find his way to the White House there could be considerable impact on the future of defense aviation.

A President, of course, is not primarily concerned with the shaping of air policy, but it is reasonable to assume that his Secretary of Defense and Secretary of the Air Force would be men who share his views. Thus, the Taft-Eisenhower battle for the nomination has an interesting aviation angle—the question of whether tactical or strategic air power will be the core of the Air Force of the future if the Republicans should succeed in breaking the 20 year lease the Democrats have held on the White House. The question is not a new one to the Air Force; it has raged since the Air Force became an independent service in 1947, and to a lesser degree before that.

Taft's position is most clearly stated. Here are some typical quotes:

"What is our first priority? It seems obvious to me that it must be the building up of an Air Force able to maintain control of the air over this continent and over the oceans that surround this continent and fully able also to deliver atom bombs for the destruction of Russian bases, fuel supplies, communication lines and manufacturing plants."

"The greatest deterrent to Russia beginning a third world war is our ability to bomb Russian cities and plants. . . . Certainly there has been little or no deterrent effect from land troops, because there have been only token forces in Europe."

"It appears clear, therefore, that our No. 1 priority must be an Air Force able to achieve control of the air. . . . Certainly the Army and Navy constitute our No. 2 priority."

"In its zest for global spending, the Administration has taken its eyes off the ball. It seems to me that clearly this result is due to the old fashioned obsession of our land generals with land warfare."

From the above, and from other statements he has made, it is obvious that Taft is an advocate of the strategic bombing school, the de Seversky school of strategic air warfare. (It is interesting to note that de Seversky is a Taft supporter.) This school believes in home-based intercontinental bombers backed by a strong interceptor force to defend against similar enemy-launched operations. It is opposed to land warfare and the tactical air power that goes with it.

Eisenhower's views on the form air power should take have not been clearly defined. He has stated emphatically that he is "for" air power and had supported the original 70 group program (as had Taft). But in his public utterances since he doffed the uniform he has not stated just what employment of air power he favors.

Nonetheless, it is not difficult to deduce his views. He is a firm believer in the North Atlantic Treaty Organization, which presupposes advocacy of defense of Western Europe primarily by land armies, backed by strong forces of ground support aircraft. Strategic bombing of behind-the-lines targets would be a secondary adjunct of the primary land defense force and it would probably be carried out from European bases. The NATO concept is opposed to the intercontinental theory of strategic warfare, the European members of NATO feeling that it would tend to make America isolationist. Thus, with his strong NATO convictions, it is safe to assume that Eisenhower favors emphasis on tactical air power.

The assumption is backed up by this statement, made at his first press conference after returning:

"If there is anyone who feels the ordinary foot soldier can be displaced, I wish he would show me how to do it." This rather implies that Eisenhower feels air power should be secondary to the foot soldier, but, to the contrary, he stated at the same time that he has always fought for a powerful air arm and believes that air power will be the dominant factor in any future war. The combination of the two statements indicates rather clearly that Eisenhower feels the airplane should be used to back up the foot soldier, not replace him as the de Seversky theorists would with intercontinental bombing.

Thus, an age-old conflict within the Air Force itself as to the method of utilizing air power has now crept into the political arena and the argument could be resolved permanently at Chicago next month, should the Republicans go on to win the election. A Taft presidency would probably mean a new emphasis on strategic warfare of the intercontinental variety, a strong interceptor force and a reshuffling of the composition of the 143 wing Air Force (or whatever strength is ultimately decided upon) to subordinate tactical fighter aircraft and troop carrier planes. An Eisenhower presidency would probably mean just the opposite, with the exception of a strong interceptor force, which is a must under either theory of air power.

Target: 1957

Every time the Air Force recomputes the effect of the appropriations made by the House in the fiscal 1953 budget on the attainment of 143 wing strength, it comes up with a new target date. The newest one, and the most distant, is July, 1957. That is a full three years beyond the "danger date," the date at which we can expect trouble from the Russians if it is ever coming. Had the House left intact the defense budget as originally submitted, the Air Force could have attained 143 wing strength by mid-1955.

Therefore, the House is gambling two years of defense insecurity against a saving of $1.6 billion (that is the amount chopped out of the original USAF budget). In view of the fact that the total defense budget is over $55 billion, the House cut would appear to be a rather dubious economy.

Further, the cuts would not only impair the USAF's efficiency during the fiscal year 1953, but the reduced readiness would extend through the following years. Reduced production (about 10% of the orders to be placed in 1953) would also weaken the production base in succeeding years, so that when another crisis arrives it will cost several times the $1.6 billion to regain the lost ground. The House cut appears to be an economy we can well do without.

. . . James J. Haggerty, Jr.

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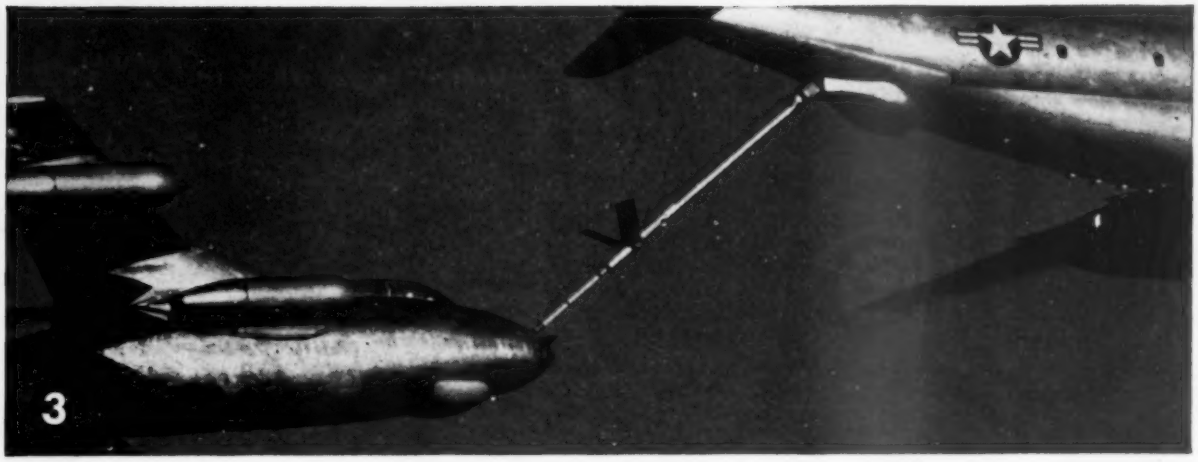

How B. F. Goodrich helps B-47 fly, land, take on fuel

Seal that saves muscle zips off to save time (1). One problem Boeing engineers faced when they designed the B-47 was the flap seals between elevator and stabilizer, rudder and stabilizer, and aileron and wing. Flaps were needed to make manual control easier. But removing them for maintenance would be costly. B. F. Goodrich Pressure Sealing Zippers were the answer. Their overlapping lips give 100% effective seal. Instead of laboriously removing screws, mechanics simply unzip the flap.

Bicycle helps bomber trim its weight (2). Shaving pounds off the B-47 was an ever-present problem for Boeing designers. When it came to the landing gear, they cut weight by using a bicycle-type gear with BFG wheel, brake and tire assembly. BFG Expander Tube brakes weigh less per unit of energy than any other brake. Wheels are light, magnesium castings. Tires take 178 psi inflation, yet are light in weight.

Rubber keeps ice out so Flying Boom can come in (3). Electric rubber seemed to be the way to prevent ice forming in the B-47's fueling receptacle-opening which receives the Flying Boom for inflight refueling. But how could it be made to fit the receptacle's complicated curves? BFG engineered the job in twelve molded sections . . . got the skin-tight fit necessary for effective ice removal.

These are typical of the developments that have come from B. F. Goodrich, leader in rubber research and engineering. BFG products for aviation include tires, wheels and brakes; heated rubber; De-Icers; Avtrim; inflatable seals; Pressure Sealing Zippers; fuel cells; Plastilock adhesives; Rivnuts; accessories. *The B. F. Goodrich Company, Aeronautical Division, Akron, Ohio.*

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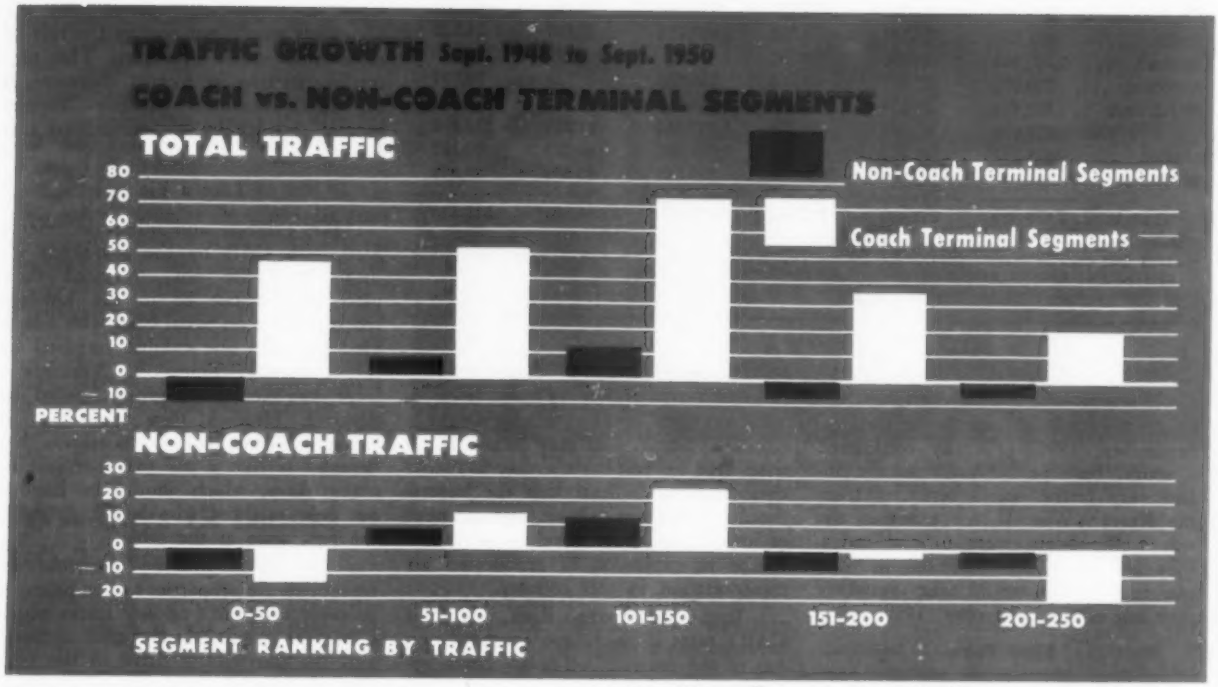


Coaches Seen Answer to Industry Expansion

CAB feels low-fare service will lead the way in normal economy; may be main revenue source.

By William V. Henzey

WITH AIRLINE traffic increasing sharply over segments which offer scheduled coach operations and with the increases coming predominantly from coach services, Civil Aeronautics Board members and top-level staff people, such as Gordon M. Bain, director of the air operations bureau today are thinking that future expansion of the scheduled airline industry may be largely in the low-fare coach field.

Bain

This position is sandwiched between:

• **Economic forces** affecting the certificated airline industry, such as the spiral of rising costs that has enveloped the industry and which does not lend itself readily to fare reductions.

• **The unrelenting drive** of the non-scheduled airlines who are still very active in the commercial field and are actively preparing for hearings which begin on August 11, to determine what place, if any, they should occupy in the future air transportation picture.

In the face of these developments, CAB thinking nevertheless anticipates a switch from "stepped-up" to "all-out" expansion of scheduled coach operations at a date largely dependent upon the return of a more normal economy.

Several Factors

During the interim, the wheels of government and industry are grinding in preparation for the coming effort. Part of this preparation consists of high-density coach operations by several airlines between selected major traffic points and extensive night-time or "off-peak" services by others at experimental fares of 4c a mile or under. Part consists of constant survey of first class, coach, and other reduced-fare trends.

Coach traffic is steadily increasing (see table) but CAB people do not view the current rate of increase as necessarily representative of the trend, interrupted in 1950, in which expansion of air transportation appeared to be predominantly in the coach field. But, Board officials point out, resumption of this trend at the earliest practicable date will be encouraged.

Several factors have intervened to postpone the day when coach may become the major source of revenue of the certificated industry. Among those to which Board people attach significant weight are:

• **The inflationary traffic** spiral resulting from the Korean war and the current mobilization effort, which has over-taxed presently-available equipment.

• **Potential loss** of available capacity to the public and loss of revenue to the carriers during time necessary to convert first-class planes to high-density coach-type aircraft.

• **Spiralling costs** and desire for more conclusive results from fare experiments and temporary but serious deterrents, such as the recent schedule cut-backs necessitated by the fuel strike.

CAB says its enthusiasm for ex-

How Coach Traffic Records Compare

First Quarter, 1951-1952

	1951			1952		
	Revenue Plane Mi.	Rev. Pass Mi. (000)	Av. Seat Mi. (000)	Revenue Plane Mi.	Rev. Pass Mi. (000)	Av. Seat Mi. (000)
American ..	484,053	28,249	32,639	1,084,607	63,282	72,317
Capital	711,576	20,592	37,732	773,946	20,263	42,305
Delta	461,732	16,166	24,810	457,714	17,607	24,532
Eastern	2,077,905	94,228	123,592	N.A.	N.A.	N.A.
National	729,872	30,005	41,805	961,758	42,538	58,707
Northwest ..	522,672	20,194	30,959	654,529	25,319	37,457
TWA	855,638	43,762	58,756	1,727,634	91,017	118,393
United	427,172	21,679	27,808	1,021,494	49,293	67,152
Western	398,409	19,219	26,081	519,685	21,356	33,863
Totals ..	**6,669,029**	**294,094**	**404,182**	**9,279,272***	**424,903***	**578,318***

N.A.—Not Available.

**—1952 first quarter industry totals are tentative in absence of Eastern statistics and reflect use of 1951 first quarter figures of Eastern for comparative purposes.*

pansion of air transportation via the coach media is supported in large part by studies for a two-year period through September, 1950, generally considered a sound base period prior to the inflationary traffic spiral resulting from the Korean War. If, for example, the war traffic boom were to end today, they feel the trends reflected in their two year studies would take up where they left off in September, 1950.

Fifty Pairs

On the basis of these studies, they determined that air traffic increased greatest over segments which offered both first class and scheduled coach services and that the increases were predominantly on the coach flights.

Between the top 50 pairs of traffic points in this country, for example, that had both coach and first-class service, the substantial increase in traffic was all 'coach with first class showing a slight drop. This held true generally for the first 150 pairs of points. After that, the trend tapered off, but with little significance, as coach services were offered sparingly between lower density pairs of points.

Not "Dead Set"

As sufficient equipment becomes available to permit orderly and sound conversion of equipment to coach seating arrangements, the Board expects more coach services over present coach routes and possible expansion to new areas. Typical of such changes was American Airlines' recent doubling of transcontinental high-density coach schedules with added service to Washington and Dallas.

Gordon M. Bain, director of CAB's air operations bureau, points out that his bureau, the Federal watch-dog of airline traffic development, is not "dead set" on any particular fare level for future coach operations nor does it have a closed mind to changes which economic fluctuations may dictate to be wise. But he emphasizes that available data tends to indicate that the bureau should encourage all-out development of low-fare mass air travel as the major source of expansion of certificated air transportation in this country.

Bain and Irving Roth, chief of CAB's rates division, are constantly on top of the current "off-peak" coach experiment at the 4c-or-under level. Generally considered a "painless" experiment because there are virtually no added costs, the "off-peak" trial is viewed as a means of gauging the degree of penetration a fare at that level will have on the travel-at-anytime-as-long-as-the-price-is-right segment of the public. Off-peak flights operate between 10 p.m. and 4 a.m.

Attention on National

Attention is also being focused on National Airlines' operations between New York and Miami, where National is operating day and night coach services at the lower "off-peak" fare level of under 4c. Since, for statistical purposes, there is the added advantage of competitive coach services available over the same route by Eastern Airlines, Board people feel the results of the National experiment may prove very helpful when fare levels for "all-out" services are determined.

On the question of current rising cost trends, CAB people are non-committal at this stage. They do not claim that the present level of coach fares must be maintained if the spiral of rising costs continues. But this does not necessarily affect theories on future expansion of commercial aviation. Coach service will be there, according to present thinking, with an adequate spread between coach and first class fares, whatever the final levels may be.

On the non-scheduled airline question, the CAB position for more scheduled coach services is consistent with the Board's decision last year in the Transcontinental Coach-Type Service Case when it emphatically stated that the non-skeds would not occupy the role of certificated coach operators. The proceeding starting in August, therefore, is on the question of possible "supplemental" service by non-certificated carriers.

Like a Pie

But exhibits and other documents filed with CAB by the non-skeds indicate they are not convinced their place should not be in the low-fare coach field on an equal basis with scheduled lines. In one exhibit prepared by the Aircoach Transport Association, large non-sked trade group headed by Amos E. Heacock, they claim it to be "sheer economic illiteracy to assume that demand is like a pie that has just so many slices, which should be handed out only to those who happen to have the first seats at the table."

The CAB position therefore assumes delicate proportions to be balanced properly with the economic forces which guide the regulated scheduled industry and the unrelenting drive of the non-skeds for equal rights to mass traffic.

Britain to Build 100 Jet Transports by 1955

More than 100 turbine-powered commercial airliners will be turned out by the British between now and 1955, according to the Society of British Aircraft Constructors, including two versions of the de Havilland Comet, the Series I powered by de Havilland Ghost engines and the Series II with Rolls Royce Avon engines. Also included are the Vickers Viscount, powered by the Rolls Royce Dart turboprop and the Bristol Brittania, with the Bristol Proteus turboprop.

The Comet's current rate of production is one a month, and this is expected to be doubled when Short Brothers & Harlan, Ltd., enters production in 1954. Also on a one-a-month production basis is the Viscount, but plans call for a six-a-month step-up. 1955 delivery is expected for the 51 Comets and 54 Viscounts on order.

Tooling up is under way at Bristol's, where 25 Brittanias are being built for British Overseas Airways Corp. and plans are in the process for licensing another production source.

Jet DC-8 Design Reported Ready

Formal announcement of Douglas Aircraft's jet transport design is expected within the next 60 days, despite refusal of company officials to comment. One source on the West Coast says the new Douglas plane will carry between 56 and 80 passengers at a speed of 585 miles an hour.

A London report indicates the plane will be known as the DC-8 and will be powered by four Pratt & Whitney split-compressor jet engines, modifications of the USAF J-57, in pods spaced along swept wings. Its gross weight, it is said, will be about 146,500 pounds—about 20% higher than the DC-7. Price of the plane is to be about $4 million, according to the London source, which attributed this data to E. F. Burton, chief engineer of Douglas' Santa Monica Division, who recently left for Europe with Nat Paschall, vice president and director of commercial sales.

INAUGURATION of Martin 2-0-2 Service by Pioneer Airlines was started on June 2 in an eight-phase program which will see complete operation with new equipment by June 29 at which time all 11 of PAL's DC-3's will be turned over to the Air Force.

TWA Buys 12 Leased 2-0-2's from Martin

TWA has purchased the 12 Martin 2-O-2's which it has been flying on lease from The Glenn L. Martin Co. Total price was $5,100,000, or $425,000 apiece.

The planes had been leased in 1950 in anticipation of delivery of 40 Martin 4-0-4's, which was to be made the following year. As the 4-0-4's were delivered, the 2-0-2's were to be returned to Martin. TWA has received 19 of its 4-0-4's to date.

"But heavy passenger traffic now experienced and anticipated has made it advisable to purchase the 2-0-2's," TWA said. They will be continued in service for the time being with no schedule changes.

AA Presses Damage Suit Against TWU

Although a five-day walkout by about 1,000 American Airlines mechanics and cargo handlers came to an end at LaGuardia and Idlewild Airports after the National Mediation Board offered its services, the airline is still planning to press a $250,000 damage suit against the CIO-Transport Workers Union charging breach of contract. The union-airline pact contained a no-strike clause.

The wildcat strike began over the shift of 30 workers from Newark Airport to Idlewild after the New Jersey field was closed down. The union sought travel pay for the men, who said they had to spend four hours a day commuting.

After the walkout came to an end, American indicated the services of the NMB were unnecessary because the grievance machinery in the contract provided for direct negotiations. Talks were then resumed without an NMB mediator sitting in.

In addition to its suit for damages, the airline is also seeking a permanent court injunction to restrain the TWU from resuming the work stoppage. The strike forced AA to cancel at least 172 flights.

Safety Department Set Up at United

A new department of safety has been established by United Air Lines, under direction of C. M. Christenson, who has been a UAL pilot. The department will report to Otis E. Kline, executive vice president.

Christenson

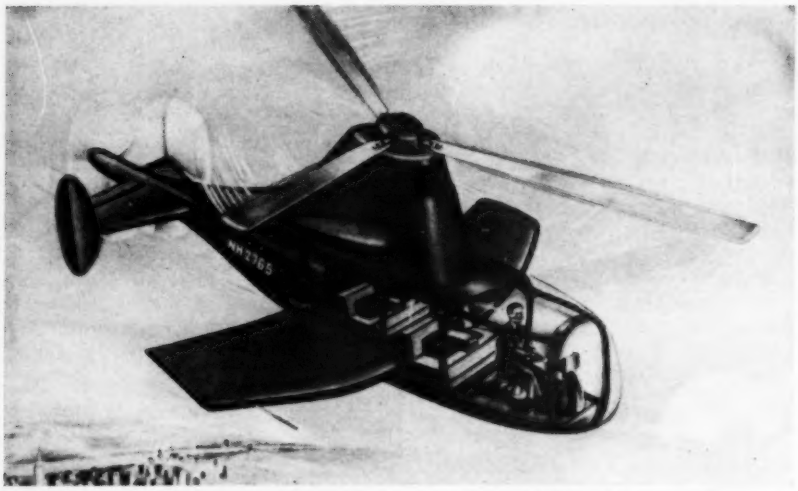
UAL's operating policy has always been "safety first, passenger comfort second, and scheduled reliability third," W. A. Patterson, president, said. "As our company grows, it is necessary to keep our organization in step with our increased requirements. Therefore, it now appears desirable to give added emphasis and direction to the over-all company problems of safety by creating a new department of safety . . ."

LAA Gets Second Sikorsky S-55

Los Angeles Airways has received its second S-55 helicopter and is checking out pilots and conducting route acceptance runs preparatory to putting it into regular service on its San Bernardino route. Plane was flown from Bridgeport in three and a half days by a Sikorsky crew headed by company test pilot Jim Chudars.

French Official Visits

U. S. manager of Air France, Henri Lessieur, played host to Andre Moynet, chairman of the civil aviation committee of the French National Assembly, on his recent visit to aviation officials in New York and Washington. Accompanied by three other members of the assembly and P. Ellevoisin, head of the National Federation of Aeronautics, Moynet was honored at a luncheon given for the delegation by CAA Administrator Charles F. Horne.



ARTIST'S SKETCH of new Jacobs Model 104.

High-Speed, Low-Cost 'Copter Readied

Five-place Model 104 will cruise at 155 mph, top speed 190; Jacobs to have prototypes by end of year.

By James J. Haggerty, Jr.

THE RAPIDLY expanding rotary wing field now has a new member company and a new helicopter design. The new company is Jacobs Aircraft Engine Co. and the new plane is a five-place, low-cost, high-speed helicopter designated the Model 104.

The Model 104 is not just a paper design. It will actually be built and plans have been completed for production. Jacobs expects to have several prototypes completed by the end of this year.

The Model 104 is a single-engine, three-bladed rotor design with both an anti-torque rotor and a pusher propeller in the rear. It has a stub wing mounted low on the fuselage below the main rotor and a twin rudder tail.

Speed Potential

Most interesting feature of the Model 104 is the speed potential—a top speed of 185-190 miles per hour and a cruising speed of about 155 miles per hour, considerably better than that of current production types. The extra speed is provided by the three-bladed pusher propeller in the tail section, which has an adjustable pitch angle so that the pilot can utilize zero angle of attack for vertical ascent. The torque rotor, turning at right angles to the pusher propeller, also has an adjustable blade angle. Both rear rotors turn at engine rpm through a drive from the main rotor gear. At high speeds, the small wing (which has about 26% the wing area of a conventional plane) maintains aircraft lift and the propeller drives the plane forward.

Power plant for the Model 104 is a standard 350 horsepower Jacobs R-755-E engine, improved and modified for helicopter use. The engine has a Civil Aeronautics Administration certificate for commercial use. Particular attention was paid to development of an efficient engine-transmission package, and as a result, the company claims, the package is a minimum of 20% lighter per horsepower delivered than other comparable helicopter installations. Modifications of the engine for helicopter use included incorporating, as part of the basic engine, a friction and overrunning clutch, the main rotor shaft, the fan, and the main tail drive reduction gear box transmissions.

Safety was another main consideration in the design of the helicopter. The fuselage primary structure can absorb a crash landing load of 25g. Pilot visibility is good in all directions and the effect of a moving load in the cabin will not cause instability due to center of gravity motion. Gasoline tanks are located in the wings rather than in the fuselage. In addition, the Model 104 will have single-piece aluminum rotor blades, preventing fatigue failure at joints. The rotor blades are made from extruded aluminum alloy, as opposed to present types of bonded steel, bonded wood, and plywood.

Future Plans

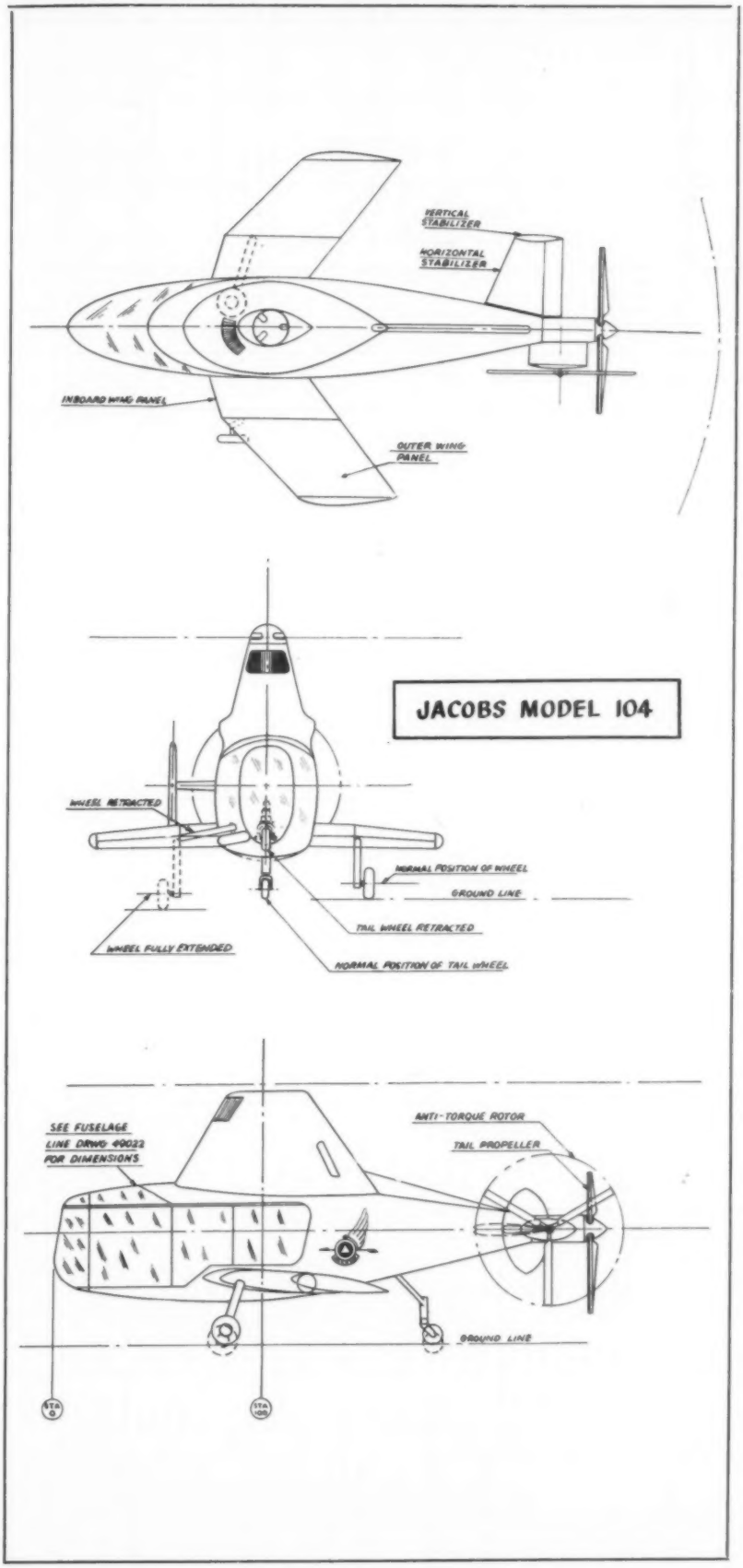
The center of gravity travel permits carrying a pilot with one to four passengers or equal cargo. Gross weight with a pilot and four passengers, baggage, and capacity fuel and oil is 3,258 pounds. Maximum range weight is 2,483 pounds (413 mile range). Overload gross weight (with six passengers, no baggage) is 3,500 pounds.

Another new feature in a helicopter design is the retractable landing gear, which, coupled with the plane's aerodynamically clean lines, adds miles per hour to its speed.

Although termed a low cost helicopter, Jacobs did not mention a specific price. The company believes that it can be offered at a price "substantially" lower than that of competitive models and also expects maintenance and operational costs to be lower.

An interesting indication of the company's future plans is the statement that the power plant package is so designed that it can be utilized in engines running up to 3,200 horsepower and is also designed so that dual or even quadruple rotor assemblies may be installed. This might lead to development of a large transport helicopter with the

COMPACT engine and rotor arrangement is shown above.



same system, an attractive possibility for military use if the high speed could be maintained in a larger machine. Jacobs states that the Army, Navy and Air Force have already expressed interest in the plane.

Here are some of the specifications of the Model 104:

Overall length .....32 feet 11 inches
Overall height .....10 feet 10 inches
Overall width .....18 feet 2 inches
Rotor blade radius .....18 feet
Tip speed .....554 feet per second

Weight	Vmax mph	Vcruise mph	Vrange mph
2165	192	160	——
2483	191	159	126
3258	186	150	138
3500	182	146	140

Weight	Endurance hrs.	Range mi.	Max R/C fpm
2165	——	——	2790
2483	4.9	413	2360
3258	4.0	376	1530
3500	3.78	362	1350

Nyrop Jet Proposal Favored by Majority

A majority of U. S. transport builders favor a proposal recently put forth by CAB Chairman Donald W. Nyrop (American Aviation, May 26) to stimulate production and testing of an American jet transport. As a result, Sen. Edwin C. Johnson (D., Colo.) is planning to introduce a bill based on the CAB plan.

In notifying the chairman of the Senate Interstate and Foreign Commerce Committee of the plane builders' view, however, the Aircraft Industries Association president, Adm. DeWitt C. Ramsey, said the manufacturers hold "varying degrees of opinion" as to whether the Nyrop program can do the job for which it is designed.

Nevertheless, Sen. Johnson has asked Nyrop's help in drafting a measure for early consideration by the Commerce committee. The Colorado Democrat has not yet decided whether formal hearings on the measure will be held.

The Nyrop plan calls for the U. S. to lend up to 75% of the cost of construction of a jet prototype (with a $15,000,000 maximum) to all qualified aircraft firms. The loans would be repayable at 1% annual interest in 10 years, but for every jet transport sold to a U. S. airline the debt would be reduced by $1,000,000. Where the amount of the loan is less than $15,000,000, each plane sold would reduce the obligation by 1/15th.

Transport Aircraft Delivery Schedule

MANUFACTURER FACILITY	SERVICE	MODEL	AIRFRAME WT.	NO.	ENGINE MODEL	MFG.	PROPELLER MODEL	MFG.	AIRFRAME CONTRACT NO.	AIR CARRIERS	1 9 5 2 3rd Quarter JUL	AUG	SEP	4th Quarter OCT	NOV	DEC	TOTAL	1 9 5 3 1st Quarter JAN	FEB	MAR	2nd Quarter APR	MAY	JUN	3rd Quarter JUL	AUG	SEP	4th Quarter OCT	NOV	DEC	TOTAL	1 9 5 4 1st Quarter JAN	FEB	MAR	2nd Quarter APR	MAY	JUN	3rd Quarter JUL	AUG	SEP	4th Quarter OCT	NOV	DEC	TOTAL
DOUGLAS	CAB	DC-6A	41,000	4	R-2800-CB17	Pw	43E60	HS	52-35	Pan American World																																	3
	CAB	DC-6A	41,250	4	R-2800-CB16	Pw	43E60	HS	51-47	American																																	
	CAB	DC-6A	41,250	4	R-2800-CB17	Pw	43E60	HS	50-40	SLICK									2	1			1	2																			3
	CAB	DC-6A	41,000	4	R-2800-CB17	Pw	48E60	HS	51-42	FLYING TIGER																																	
	CAB	DC-6B	44,000	4	R-2800-CB16	Pw	43E60	HS	51-11	American								1	2						1	2	2				5	1		1									2
	CAB	DC-6B	44,170	4	R-2800-CB16	Pw	43E60	HS	51-46	American										2	3										5												
	CAB	DC-6B	44,070	4	R-2800-CB16	Pw	43E60	HS	50-34	Pan American Clipper																																	
	CAB	DC-6B	45,330	4	R-2800-CB17	Pw	43E60	HS	50-30	Pan American World	4	2	1				7						1							1												
	CAB	DC-6B	44,070	4	R-2800-CB16	Pw	43E60	HS	52-34	Pan American Clipper																																	
	CAB	DC-6B	44,170	4	R-2800-CB16	Pw	43E60	HS	51-48	United															2					2													2
	CAB	DC-6B	43,800	4	R-2800-CB16	Pw	43E60	HS	50-3	United		1					2																									
	CAB	DC-6B	44,170	4	R-2800-CB16	Pw	43E60	HS	51-6	National			2	4			6																									
	CAB	DC-6B	44,170	4	R-2800-CB16	Pw	43E60	HS	51-31	National						2	2																									
	CAB	DC-6B	43,770	4	R-2800-CB16	Pw	43E60	HS	51-10	Western				3		2	5																									
	CAB	DC-6B	44,170	4	R-2800-CB16	Pw	43E60	HS	51-40	Continental												1	1																			
	CAB	DC-6B	45,330	4	R-2800-CB17	Pw	43E60	HS	51-45	Pan American World													1		1	1	2	2		4	11			1	2	2	3	1				9
	CAB	DC-7	96,651	4	972TC18DA1	WR	34E60	HS	52-1	Delta																								1	1	1	1					4
	CAB	DC-7	96,651	4	972TC18DA1	WR	34E60	HS	52-2	American							1						1	1	2	2	2	2	2	15				2	3	3	2					10
	CAB	DC-7	96,651	4	972TC18DA1	WR	34E60	HS	52-9	National																			1	1	1	3		1								1
	CAB	DC-7	96,651	4	972TC18DA1	WR	34E60	HS		United																								①	②	③	④	③	④	②				15
TOTAL DOUGLAS CAB											5	3	3	7		4	32	1	4	4	3	3	6	6	5	6	5	3	7	58	4	6	8	7	6	5	3	3	2	2			46
	MSA	DC-6A	40,470	4	R-2800-CB17	Pw	43E60	HS	51-51	KLM															1					1												
	MSA	DC-6B	45,170	4	R-2800-CB17	Pw	43E60	HS	51-60	ALITALIA																		1		1		1	1	1								3
	MSA	DC-6B	45,170	4	R-2800-CB17	Pw	43E60	HS	50-57	SAS				1	2	3	6																									
	MSA	DC-6B	44,170	4	R-2800-CB17	Pw	43E60	HS	50-25	Swiss Air			1				1																									
	MSA	DC-6B	44,800	4	R-2800-CB17	Pw	43E60	HS	51-50	Swiss Air																2	1			3												
	MSA	DC-6B	44,170	4	R-2800-CB17	Pw	43E60	HS	50-36	K L M	1						1																									
	MSA	DC-6B	44,670	4	R-2800-CB17	Pw	43E60	HS	51-23	SABENA									1	3	2									6												
	MSA	DC-6B	44,970	4	R-2800-CB17	Pw	43E60	HS	51-24	T.A.I. (Fokker)											1	1	1							3												
	MSA	DC-6B	44,670	4	R-2800-CB17	Pw	43E60	HS	52-11	SABENA																																	2
	MSA	DC-6B	44,670	4	R-2800-CB17	Pw	43E60	HS	52-16	SAS															1		1	1	1	4	2												2
	MSA	DC-6B	45,670	4	R-2800-CB17	Pw	43E60	HS	52-30	KLM																		①		1												
TOTAL DOUGLAS MSA											1		1	1	2	3	8		1	3	3	1	1	1	1		3	4	1	19	4	2	1								7
	CAN DIV NPA	DC-6B	45,670	4	R-2800-CB17	Pw	43E60	HS	51-29	CPA						1	1	2							1					2											
		DC-6B	45,671	4	R-2800-CB17	Pw	43E60	HS	51-49	CPA												1		1	1					3											
TOTAL DOUGLAS CAN, DIV. NPA																1	1	2				1		1	1					5											
	OIT	DC-6B	44,470	4	R-2800-CB17	Pw	43E60	HS	50-48	Northern Airlines		1					1																								
	OIT	DC-6B	44,170	4	R-2800-CB16	Pw	43E60	HS	51-25	CMA (Nesbit)												1	2							3												
TOTAL DOUGLAS OIT												1					1					1	2						3												
GRAND TOTAL DOUGLAS FIRM ORDERS											6	4	4	8	2	8	32	3	5	7	6	4	9	9	7	7	8	7	8	80	8	8	9	7	6	5	3	3	2	2			53
LOCKHEED	CAB	1049	50,000	4	975C1/CB1	WR	43E60-7	HS	LD-75	TWA	2						2																								1
	CAB	1049C	51,000	4	972TCDA1	WR	43E60-7	HS	LD-89	EAL														1	2	4	4	4	16	1		2	2	1							5
	CAB	1049B	49,500	4	972TCDA1	WR	43E60-7	HS	LD-96	3 of W																															
TOTAL LOCKHEED CAB											2						2								1	2	4	4	4	15	1	2	2	1							6
	CAN DIV NPA	1049C	49,500	4	972TCDA1	WR	43E60-7	HS	LX-90	TRANS CANADA																2	2		4	1											1
	OIT	1049C	49,500	4	972TCDA1	WR	C6345-C404	CW	LX-88	PAK AIR LTD.														1		2			3												
	OIT	1049C	49,500	4	972TCDA1	WR	C6345-C404	CW	LX-91	QANTAS																1			1	2											2
	OIT	1049C	49,500	4	972TCDA1	WR	C6345-C404	CW	LX-94	AIR INDIA																		①	1		①											1
TOTAL LOCKHEED OIT																								1		3	1		5	2	1									3
	MSA	1049C	49,500	4	972TCDA1	WR	43E60-7	HS	LX-87	AIR FRANCE								1			1	3	3	2						10											
	MSA	1049C	49,500	4	972TCDA1	WR	C6345-C404	CW	LX-82	KLM								1	4		3	1								9											
	MSA	1049C	49,500	4	972TCDA1	WR	43E60-7	HS	LX-93	BRANIFF INT.																		①		1											
	MSA	1049E	48,500	4	972TCDA1	WR	C6345-C404	CW	LX-101	KLM																					①											1
TOTAL LOCKHEED MSA																					2	4	4	4	3	2			1	20	1										1
GRAND TOTAL LOCKHEED FIRM ORDERS											2						2		2	4	4	4	3	2	1	3	4	9	8	44	5	3	2	1							11

C-7 Program Boosts Civil Aircraft Output

FORTY NEW transports, 30 for domestic airlines and 10 for foreign carriers, have been included in the C-7 quarterly aircraft production program recently approved by the Air Coordinating Committee and recommended to the Defense Production Administration. Production of these planes will start in the fourth quarter of 1952.

The total number of transports on firm order includes 120 for 1952 delivery, 206 for 1953, and 50, to date, for 1954. To power these aircraft, the two principal aircraft engine manufacturers, Pratt & Whitney and Wright Aeronautical, have firm orders for 444 engines in the remainder of 1952, 1,065 in 1953 and 210, to date, for 1954. These figures include engines for installation and spares.

Largest Order

Largest single order disclosed in this program is a firm order for 15 Douglas DC-7's by United Air Lines plus 19 "anticipated" orders for this aircraft. United's President W. A. Patterson, has indicated that United will order 25 four-engine aircraft but has not indicated what types they will be.

The most significant trend to be observed in the C-7 program is the number of helicopters scheduled for commercial use. Unlike the transport aircraft program, which is based on actual orders, non-air carrier schedules are based on material approvals. These show 106 helicopters approved for delivery to civil operators during the last six months of 1952, 312 during 1953 and 267 during 1954. McDonnell has been authorized to build the greatest number—144 of its Model 79A ramjet helicopter in both 1953 and 1954.

Materials Trend

Another significant trend is the increased materials allocation for non-air carrier aircraft in all three years. The civil industry had a difficult time getting earlier approval for production of 3,500 aircraft in this category. The second half of 1952 shows approval for 965 aircraft, including helicopters, for this type use. In 1953 this would be increased to 4,769 and in 1954 to 5,219. This is not assured production based on actual orders but rather a materials authorization. Up to this time there has been no indication that additional materials would be authorized.

Other important information con-

tained in the C-7 program, as outlined in detail on the accompanying pages:

• **Fifteen of American's** DC-7's will be delivered in 1953, 10 in 1954.

• **United's first** DC-7's will be delivered in the third quarter of 1954.

• **National Airlines'** Convair 340 order has been upped from six to eight aircraft.

• **Fifteen of Eastern's** Lockheed L-1049C's will be delivered in 1953, one in 1954.

New Cessna

• **Cessna has been** authorized to produce more non-air carrier aircraft than any other manufacturer, 911 in 1952, 1,916 in 1953 and 1,923 in 1954. One of Cessna's planes is a new model, Model 180, of which five will be built this year, and which will make up the majority of 1953 and 1954 deliveries.

• **Helio Corporation expects** to produce 12 aircraft in 1952, 144 in both 1953 and 1954.

• **Pratt & Whitney has** 402 R-2800 series engines scheduled for 1952 delivery, 627 for 1953 delivery and 84, to date, for 1954.

• **Wright Aeronautical has** 42 R-3350 turbo-compound engines scheduled for delivery this year to commercial airlines, 438 in 1953 and 126, to date, in 1954.

• **American cut** its DC-6A order from five to three aircraft, increased its DC-6B orders by a like amount.

• **Aeronave's now has** five Convair 340s on order all for 1954 delivery.

• **Braathens Safe has** one L-1049C scheduled for December 1953 delivery.

• **CMA has eight Convair** 340's on order, one for 1953 delivery, the rest in 1954.

Three for Avensa

• **Avensa will get** three Convair 340's in the first quarter of 1954.

• **Beech Aircraft Corporation** is authorized to produce 234 more C-35 Bonanzas in 1952, 468 in both 1953 and 1954.

• **Piper is authorized** to build 577 aircraft during the remainder of this year, 1,452 in 1953 and 1,812 in 1954.

Civil Carrier Engine Requirements[1]

MANUFACTURER AND MODEL	1952																		1953												1954			
	3rd Quarter			4th Quarter			TOTAL	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			TOTAL	1st Quarter			2nd Quarter			3rd Quarter			4th Quarter			TOTAL
	JUL	AUG	SEP	OCT	NOV	DEC		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC		JAN	FEB	MAR	APR	MAY	JUN	JUL	AUG	SEP	OCT	NOV	DEC	
FIRM AIRFRAME ORDERS																																		
DOUGLAS AIRCRAFT PRATT & WHITNEY R-2800-CB16																																		
INSTALLATION	28		16	4	8	8	64	12	8	16	20						4	4	64															
CONCURRENT SPARES	14		8	2	4	4	32	6	4	8	10						2	2	32															
CONVAIR AIRCRAFT PRATT & WHITNEY R-2800-CB16																																		
INSTALLATION	16	14	14	14	12	12	82	16	10	14	16	8	12	8	8	10	16	14	12	144	6	6	2	2	2	2								20
CONCURRENT SPARES	8	7	7	7	6	6	41	8	5	7	8	4	6	4	4	5	8	7	6	72	3	3	1	1	1	1								10
TOTAL ALL AIRCRAFT PRATT & WHITNEY R-2800-CB16																																		
INSTALLATION	44	14	30	18	20	20	146	28	18	30	36	8	12	8	8	10	16	18	16	208	6	6	2	2	2	2								20
CONCURRENT SPARES	22	7	15	9	10	10	73	14	9	15	18	4	6	4	4	5	8	9	8	104	3	3	1	1	1	1								10
TOTAL PRATT & WHITNEY R-2800-CB16 REQUIREMENTS	66	21	45	27	30	30	219	42	27	45	54	12	18	12	12	15	24	27	24	312	9	9	3	3	3	3								30
DOUGLAS AIRCRAFT PRATT & WHITNEY R-2800-CB17																																		
INSTALLATION	4	8	16	8	12	16	64	12	4	16	12	20	20	20	16	20	20	12	16	188	12	12	8	4										36
CONCURRENT SPARES	2	4	8	4	6	8	32	6	2	8	6	10	10	10	8	10	10	6	8	94	6	6	4	2										18
CONVAIR AIRCRAFT PRATT & WHITNEY R-2800-CB17																																		
INSTALLATION				2		2	4			2		2								4														
CONCURRENT SPARES				1		1	2			1		1								2														
TOTAL ALL AIRCRAFT PRATT & WHITNEY R-2800-CB17																																		
INSTALLATION	4	8	16	10	12	18	68	12	4	18	12	22	20	20	16	20	20	12	16	192	12	12	8	4										36
CONCURRENT SPARES	2	4	8	5	6	9	34	6	2	9	6	11	10	10	8	10	10	6	8	96	6	6	4	2										18
TOTAL PRATT & WHITNEY R-2800-CB17 REQUIREMENTS	6	12	24	15	18	27	102	18	6	27	18	33	30	30	24	30	30	18	24	288	18	18	12	6										54
MARTIN AIRCRAFT PRATT & WHITNEY R-2800-CB3																																		
INSTALLATION	18	16	12				46																											
CONCURRENT SPARES	9	8	6				23																											
CONVAIR AIRCRAFT PRATT & WHITNEY R-2800-CB3																																		
INSTALLATION	2	2	2			2	8	2				2		4	6	4				18														
CONCURRENT SPARES	1	1	1			1	4	1				1		2	3	2				9														
TOTAL ALL AIRCRAFT PRATT & WHITNEY R-2800-CB3																																		
INSTALLATION	20	18	14			2	54	2				2		4	6	4				18														
CONCURRENT SPARES	10	9	7			1	27	1				1		2	3	2				9														
TOTAL PRATT & WHITNEY R-2800-CB3 REQUIREMENTS	30	27	21			3	81	3			3			6	9	6				27														
R-2800 REQUIREMENTS (ALL AIRCRAFT)																																		
INSTALLATION	68	40	60	28	32	40	268	42	22	48	48	32	32	32	30	34	36	30	32	418	18	18	10	6	2	2								56
CONCURRENT SPARES	34	20	30	14	16	20	134	21	11	24	24	16	16	16	15	17	18	15	16	209	9	9	5	3	1	1								28
TOTAL PRATT & WHITNEY REQUIREMENTS	102	60	90	42	48	60	402	63	33	72	72	48	48	48	45	51	54	45	48	627	27	27	15	9	3	3								84
LOCKHEED AIRCRAFT CURTISS WRIGHT TURBOJET																																		
INSTALLATION				8	16		24	16	16	12	8	4	12	16	36	28	20	8	8	184	4													4
CONCURRENT SPARES				4	8		12	8	8	6	4	2	6	8	18	14	10	4	4	92	2													2
TOTAL CURTISS WRIGHT TURBOJET REQUIREMENTS				12	24		36	24	24	18	12	6	18	24	54	42	30	12	12	276	6													6
DOUGLAS AIRCRAFT CURTISS WRIGHT TURBOJET																																		
INSTALLATION					4		4		4	4	4	8	8	12	12	12	12	16	16	168	16	12	12	8	12	8	8								80
CONCURRENT SPARES					2		2		2	2	2	4	4	6	6	6	6	8	8	84	8	6	6	4	6	4	4								40
TOTAL CURTISS WRIGHT TURBOJET REQUIREMENTS					6		6		6	6	6	12	12	18	18	18	18	24	24	162	24	18	18	12	18	12	12								120
CURTISS WRIGHT REQUIREMENTS (ALL AIRCRAFT)																																		
INSTALLATION					8	20	28	16	20	16	12	12	20	28	48	40	32	24	24	292	20	12	12	8	12	8	8								84
CONCURRENT SPARES					4	10	14	8	10	8	6	6	10	14	24	20	16	12	12	146	10	6	6	4	6	4	4								42
TOTAL REQUIREMENTS CURTISS WRIGHT					12	30	42	24	30	24	18	18	30	42	72	60	48	36	36	438	30	18	18	12	18	12	12								126
TOTAL ENGINE REQUIREMENTS C-7 PROGRAM																																		
INSTALLATION	68	40	60	28	40	60	296	58	42	64	60	44	52	60	78	74	68	54	56	710	38	30	22	14	14	10	8							140
CONCURRENT SPARES 2/	34	20	30	14	20	30	148	29	21	32	30	22	26	30	39	37	34	27	28	355	19	15	11	7	7	5	4							70
TOTAL FIRM C-7 ENGINE REQUIREMENTS 3/	102	60	90	42	60	90	444	87	63	96	90	66	78	90	117	111	102	81	84	1065	57	45	33	21	21	15	12							210
ANTICIPATED ENGINE REQUIREMENTS 4/ (BASED ON TYPE OF ENGINE TO BE SPECIFIED BY PURCHASER)																																		
FOR 4 ENGINE AIRCRAFT								24	24	24	24	24	24	27	27	27	6	6	18	30	24	30	48	60	60	72	60	78	78					510
FOR 2 ENGINE AIRCRAFT																	27	30	33	315	39	39	21	21	21	21								162
TOTAL ANTICIPATED ENGINE REQUIREMENTS								24	24	24	24	24	24	27	27	27	33	36	51	345	63	69	69	81	81	93	60	78	78					672

1. *Engine delivery dates based upon airframe dates (contained in foreign and domestic civil carrier aircraft C-7 schedule) minus 90-day lead time.*
2. *Concurrent spares based upon 50% of installation requirements.*
3. *Based upon firm airframe orders.*
4. *Based upon anticipated airframe orders.*

C-7 Program for Civil Non-Carrier Aircraft

MANUFACTURER FACILITY	SER-VICE	MODEL	AIR-FRAME WT.	ENGINE NO.	ENGINE MODEL	ENGINE MFG.	PROPELLER MODEL	PROPELLER MFG.	1952 3rd Quarter JUL	1952 3rd Quarter AUG	1952 3rd Quarter SEP	1952 4th Quarter OCT	1952 4th Quarter NOV	1952 4th Quarter DEC	1952 TOTAL	1953 1st Quarter JAN	1953 1st Quarter FEB	1953 1st Quarter MAR	1953 2nd Quarter APR	1953 2nd Quarter MAY	1953 2nd Quarter JUN	1953 3rd Quarter JUL	1953 3rd Quarter AUG	1953 3rd Quarter SEP	1953 4th Quarter OCT	1953 4th Quarter NOV	1953 4th Quarter DEC	1953 TOTAL	1954 1st Quarter JAN	1954 1st Quarter FEB	1954 1st Quarter MAR	1954 2nd Quarter APR	1954 2nd Quarter MAY	1954 2nd Quarter JUN	1954 3rd Quarter JUL	1954 3rd Quarter AUG	1954 3rd Quarter SEP	1954 4th Quarter OCT	1954 4th Quarter NOV	1954 4th Quarter DEC	1954 TOTAL
AERO DESIGN & ENG. COMPANY	CAA	520	2629	2	GO-435-C2	LYC	HC12X20-8E/	HART	9	9	9	11	9	9	56	9	11	9	9	9	11	9	9	9	11	9	9	114	10	12	10	10	12	10	10	12	10	10	12	10	128
BEECH	CAA	C 35	1024	1	E-185-11	CONT	A15-109/A15-247-B3	BEECH	39	39	39	39	39	39	234	39	39	39	39	39	39	39	39	39	39	39	39	468	39	39	39	39	39	39	39	39	39	39	39	39	468
	CAA	18	3625	2	R-985-AN-14B	P&W	A3D30-237/A3D30-15	HS	6	6	6	6	6	6	36	6	6	6	6	6	6	6	6	6	6	6	6	72	6	6	6	6	6	6	6	6	6	6	6	6	72
	CAA	50	2490	2	GO-435-C2	LYC	2A34-[illegible]-96	BEECH	3	3	4	6	7	7	30	11	12	12	15	15	15	15	15	15	15	15	15	110	15	15	15	15	15	15	15	15	15	15	15	15	180
TOTAL BEECH									45	45	45	45	45	45	270	48	48	49	51	52	52	54	57	57	60	60	60	650	60	60	60	60	60	60	60	60	60	60	60	60	720
BELL	CAA	47D1	1102	1	WR-200-C32	FR	ROTOR		4	4	5	8	8	8	37	8	8	8	8	15	15	15	10	10	5	5	5	112	5	5	5	5	5	5	5	5	5	5	5	5	60
CALL	CAA	A-2	688	1	C-290-3	LYC	HR170/AL7649	McC	1	1	1	1	1	1	6	1	1	1	1	1	1	1	1	1	1	1	1	12	1	1	1	1	1	1	1	1	1	1	1	1	12
CESSNA	CAA	170B	706	1	C-145-2	CONT	HR170/DM 7653	McC	174	168	147	115	20		624																										
	CAA	170C	706	1	C-145-2	CONT	HR170/DM 7653	McC					56	84	140	80	80	88	66	63	66	42	42	44	44	40	60	716	80	80	80	60	60	60	60	60	60	40	40	60	740
	CAA	190	1493	1	W-670	CONT	A[illegible]-225/A[illegible]-10	HS	5	5	5	5	5	5	30														8	8	8	8	8	8	5	5	5	5	5	5	78
	CAA	195	1493	1	R-755-B2	[illegible]	A[illegible]-225/A[illegible]-15	HS	10	11	11	11	8	8	59	10	10	10	10	10	10	10	10	10	10	10	10	120	7	7	7	7	7	7	5	5	5	5	5	5	72
	CAA	195A	1493	1	R-755-9	[illegible]	A[illegible]-225/A[illegible]-15	HS	9	10	10	10	7	7	53	10	10	10	10	10	10	10	10	10	10	10	10	120	7	7	7	7	7	7	5	5	5	5	5	5	72
	CAA	180		1	O-470-A	CONT	2A[illegible]-1/8833	HART						5	5	20	40	66	88	105	132	126	105	84	66	60	66	958	80	80	80	80	80	80	80	80	60	40	40	50	830
	CAA	310		2	O-470-A	CONT	2A[illegible]-1/8833	HART																		3	3	5	7	9	12	14	16	20	24	24	24	24	24	24	24	203
TOTAL CESSNA									198	194	173	141	96	109	911	120	140	174	174	188	218	188	167	148	130	120	149	1916	180	182	184	167	169	171	170	174	154	114	114	144	1923
DOMAN	CAA	LZ-5		1	5D-880-D	LYC	ROTOR																	1		1	1	3	2	2	2	1	1	1	1	1	1	1	1	1	15
HELIO	CAA	H-391		1	GO-435-C2	LYC	HC12X20-8E/	HART				3	3	6	12	12	12	12	12	12	12	12	12	12	12	12	12	144	12	12	12	12	12	12	12	12	12	12	12	12	144
MEYERS	CAA	145	1300	1	C-145	CONT	HR170/DM 7657	McC	1	1	2	1	1	1	7	4	4	4	4	4	4	4	4	4	4	4	4	48	4	4	4	4	4	4	4	4	4	4	4	4	48
	CAA	185	1525	1	E-185	CONT	HR[illegible]-7A/8933	HART	1	1	1	1	1	1	6	4	4	4	4	4	4	4	4	4	4	4	4	48	4	4	4	4	4	4	4	4	4	4	4	4	48
TOTAL MEYERS									2	2	3	2	2	2	13	8	8	8	8	8	8	8	8	8	8	8	8	96	8	8	8	8	8	8	8	8	8	8	8	8	96
McDONNELL	CAA	79A		2	8R-14	McD	ROTOR		4	4	4	12	12	12	48	12	12	12	12	12	12	12	12	12	12	12	12	144	12	12	12	12	12	12	12	12	12	12	12	12	144
McCULLOCH	CAA	MC4C			4A4-200-C6	FR	ROTOR		2	2	3	4	4	4	19	4	4	4	4	4	4	4	4	4	4	4	4	48	4	4	4	4	4	4	4	4	4	4	4	4	48
MOONEY	CAA	M-18-C	513	1	A-65-8;12	CONT	65A66	FLOT	4	4	4	3	3	3	21	2	2	3	3	3	3	3	3	3	3	3	3	34	3	3	3	3	3	3	3	3	3	3	3	3	36
	CAA	M-18-L	505	1	O-145-B2	LYC	63L60	FLOT	4	4	4	3	3	3	21	2	2	2	3	3	3	3	3	3	3	3	3	33	3	3	3	3	3	3	3	3	3	3	3	3	36
TOTAL MOONEY									8	8	8	6	6	6	42	4	4	5	6	6	6	6	6	6	6	6	6	67	6	6	6	6	6	6	6	6	6	6	6	6	72
PIPER	CAA	PA-18	574	1	O-290-D	LYC	M7605AM-2-50	SEN	54	54	54	40	41	41	284	58	58	58	58	58	58	58	58	58	58	58	68	696	58	58	58	58	58	58	58	58	58	58	58	58	696
	CAA	PA-20	643	1	O-290-D2	LYC	M7605AM-2-54	SEN	53	54	54	40	41	41	283	43	43	43	43	43	43	43	43	43	43	43	43	516	43	43	43	43	43	43	43	43	43	43	43	43	516
	CAA	PA-23		2	O-290-D2	LYC	M7605AM-2-54	SEN				3	3	4	10	5	5	5	16	17	17	25	28	28	33	33	34	240	50	51	50	51	50	50	50	50	50	50	50	50	600
TOTAL PIPER									107	108	108	83	85	86	577	106	106	106	117	118	118	126	126	126	134	134	135	1452	151	151	151	151	151	151	151	151	151	151	151	151	1812
REGENT	CAA	260		1	GO-435-C2	LYC	220	KOP			1	3	4	4	12	4	4	4	4	4	4	4	4	4	4	4	4	48	4	4	4	4	4	4	4	4	4	4	4	4	48
TAYLORCRAFT	CAA	19		1	O-235-12	CONT	72ER-48	SEN	4	4	4	4	4	4	24	6	9	9	9	9	9	9	9	9	9	9	6	102	6	9	9	6	9	9	6	9	9	6	9	9	96
	CAA	15A		1	O-145-12	CONT	75DR-48	SEN	7	7	7	7	7	7	42	14	14	14	14	14	14	14	14	14	14	14	14	168	14	14	14	14	14	14	14	14	14	14	14	14	168
TOTAL TAYLORCRAFT									11	11	11	11	11	11	66	20	23	23	23	23	23	23	23	23	23	23	20	270	20	23	23	20	23	23	20	23	23	20	23	23	264
SIKORSKY	CAA	S-55	3459	1	R-1340-51A2	PAN	ROTOR		1	1					2	1	1	1		1	1							5													
GRAND TOTAL ALL AIRCRAFT									392	389	371	330	286	303	2071	357	382	416	469	453	485	464	439	421	410	399	426	5081	475	482	482	461	468	468	464	473	451	408	413	441	5486

Interview

with

COLE H. MORROW

Chairman of the Board, Corporation Aircraft Owners Association

★

Corporation Aircraft Open Up New Markets

★ ★ ★

Cole H. Morrow: As chairman of the board of directors of the Corporation Aircraft Owners Association, Cole H. Morrow directs the activities of one of aviation's fastest growing segments. Morrow, 39, was born in Lynville, Tenn. and received his higher education at the Universities of Tennessee and Vanderbilt.

At J. I. Case Company, Racine, Wisconsin, a manufacturer of farm equipment, Morrow is chief plant engineer. He holds a commercial pilot license with instrument rating. The company plane has proved itself many times in Case's operation and Morrow is consequently one of the corporation aircraft industry's best salesmen.

He is president of the Racine Airport Corporation, a member of the Wisconsin Aeronautics Industry Advisory Commission and is on the Industry Advisory Panel of the Air Coordinating Committee and the Air Mobilization Committee of the National Securities Resources Board.

Among the organizations to which Morrow belongs are the American Society of Mechanical Engineers, American Society of Chemical Engineers, American Society of Heating and Ventilating Engineers, American Society of Refrigeration Engineers, Institute of Electrical Engineers and National Associaton of Power Engineers.

Morrow is one of a relatively new breed of aviation men who look on the airplane as a business tool, are businessmen first and pilots as a means to that end.

Q. HOW MANY members does CAOA now have?

A. Approximately 200. It was organized in 1947. Membership is increasing quite rapidly and as a matter of fact it has been doubling every year for the past three years.

Q. How many planes and crews does this membership represent?

A. Well over 500, and most of the planes are multi-engined. The Twin Beech comprises by far the largest number; the DC-3 is next in number, then Lodestars. The balance of the multi-engined aircraft is split up between converted B-25's, B-26's, and B-17's, plus four Convairs. In addition, a large number of single-engine aircraft are being used for business purposes.

Q. What percentage of the corporation aircraft field does your membership represent?

A. About 25% of the corporations that actually own airplanes; in the number of airplanes in the multi-engined class, about 35% to 37%. In the single-engine class—2,500 lbs. gross weight and up—approximately 10%.

Q. Do you have any idea of how much purchasing power corporation users represent? In other words, what do they buy in a year in the way of planes, parts and equipment, etc.?

A. I would estimate that the total amount of money spent for these items is between $30 and $50 million. Total investment in corporation owned planes is in excess of $175 million and the rate of growth is probably greater at this time than it has ever been. The amount of money spent in the operation of all corporation planes is over $100 million per year.

Q. What utilization are people getting out of their twin-engine aircraft?

A. The average utilization is about 500 to 600 hours per year.

Q. What services does CAOA offer to its members?

A. The greatest service that CAOA has done for corporation flying as well as its members is to bring identity and recognition to this segment of air transportation. I think you know that until just recently corporation flying was not recognized as a separate segment of our air transportation system, nor the importance of the corporation airplane in business. CAOA now represents an organized front with regard to legislation and overall planning by government—CAA and others—and we are on the alert for anything which might infringe or interfere with the freedom of operation and utilization of the corporation airplane. Also, we bring to the attention of the proper authorities the requirements of corporation aircraft in all phases of their operation. We provide technical bulletin service to our members, giving them advance information quite frequently on all technical phases of aircraft operation. We also function as a focal point for the exchange of ideas and procedures and operational techniques between corporation users, and hold forums for discussing and exploring problems peculiar to our industry.

Q. Does the appointment of Herb Fisher as executive director and secretary mean that CAOA's program is to be expanded and its activities increased?

A. The tremendous potential of the Association, and the appointment of Herb Fisher, very definitely indicate a continued growth of the activities. The selection of a man with the qualifications of Herb Fisher is tangible evidence of the expanded program we contemplate in the future. His extensive experience in administrative and organizational activities, plus his years of flying as a leading test pilot, makes

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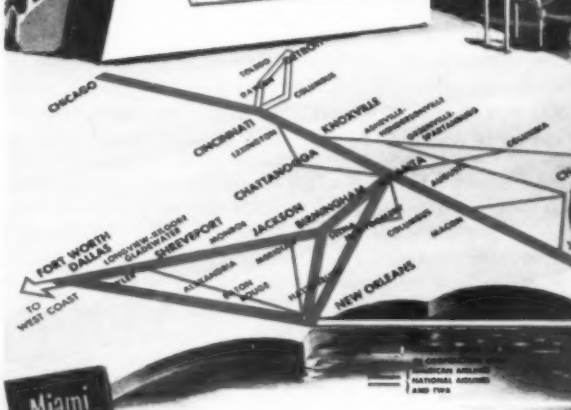

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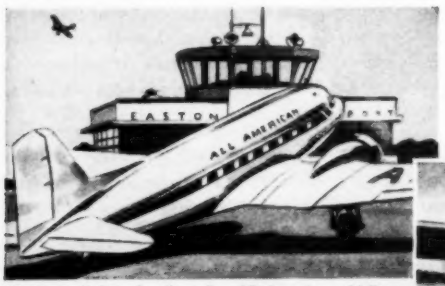

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for an ideal combination in conducting the Association's business and understanding the corporation pilot and his flight operational problems.

Q. Is there any particular type of aircraft that is best suited for corporation use?

A. I don't think there is any aircraft now in use that is entirely suited to corporation flying. The corporation fleet has been built up primarily out of airplanes that were designed for other purposes. I think that the manufacturing industry has been remiss in not anticipating and producing for the aircraft requirements of corporations. Maybe they are conscious now of the potentialities in this field, but they find themselves in the position of not being able to do very much about it, primarily because they are loaded with military production, and also because development costs are extremely high.

What Is Required?

Q. Do you think that the corporation aircraft operator's requirements are being given sufficient weight?

A. No. This problem of making the aircraft industry cognizant of our needs has been one of the main projects of CAOA and will continue to be our main activity for sometime.

Q. What are you doing about this problem of a suitable aircraft?

A. We are trying to determine what is required in aircraft specifications to do the job properly for corporations, and when I say "what is required" I would like to emphasize that we are not trying to find out what some of the operators say they want, because I believe that what they *want* and what they require might be two different things. There is talk about aircraft to cruise at 350 mph with 2500 mile range, pressurized cabins, and so forth. I think that the cost of such a tool puts it beyond any economic possibility of extensive use by corporations.

Q. What do you think the size of the market would be for such an aircraft?

A. First of all, I think you have to break it down into whether one airplane will do the job. It seems to me at this time—and we have not completed our figures—that about three airplanes are going to be required and that there is a large potential market. The fact that corporations now operate over 1700 multi-engine airplanes, most of which have been purchased since 1945, is very tangible evidence that there is a market. Also, we have found that practically all of the users of these aircraft are looking for a replacement airplane. The only planes that are available for the continued expansion of corporation flying are those discarded by the airlines.

There are 20,000 corporations in this country with sufficient capitalization to afford an airplane and utilize it efficiently, and yet only 800 of them actually own multi-engine airplanes today. Furthermore, the rate of growth of corporation flying is higher today than it has ever been but this is going to be retarded unless suitable new aircraft are available. I don't think the industry should let that happen.

Q. How much can corporations afford to pay?

A. It will vary with the company but the fact that an airline with utilization of better than 3,000 hours per year can pay $500,000 to $2,000,000 for an airplane does not necessarily mean that a corporation with 500 hours a year utilization could afford even to stand the fixed charges of that kind of an investment. Since your potential utilization is limited, you cannot possibly expect to justify an extremely high capital investment.

The light twin-engine airplane requirement will not be taken care of until at least 1954. The Twin Beech Bonanza is on the market in very limited production; there is the Aero Commander also getting into production; Piper has a little one; Cessna has one that is coming along, so eventually the light twin requirement is going to be taken care of fairly well. In between there is an airplane requirement somewhat on the lines of the twin-engine Beech or the de Havilland Dove. I think the Dove is a good corporation airplane but it, too, could be improved because it was not initially designed to meet corporation requirements. A replacement for the DC-3, Lodestar and larger aircraft is not in sight.

Q. Is all-weather flying important to the corporation user and is he willing to pay the price for the equipment involved?

A. All-weather flying is essential to corporations and the present fleet of corporation airplanes is as well equipped as any other fleet of airplanes flying today, if not better. A good example of this is the Sperry Zero Reader. Sperry had never considered anything but the military and airline market, yet 90% of the units sold during the first year went into corporation aircraft. Corporation aircraft comprise one of the best markets for automatic pilots, automatic couplers, and similar instruments.

A National Security Resources Board survey made a year ago last November found that the corporation aircraft fleet was by far the best equipped to utilize the programmed new navigation plans, patterns and equipment.

Q. Has the taking over of some civil airports by the military affected corporation users?

A. Yes, very definitely the military operation has handicapped a number of corporation aircraft users and in some cases has forced them to move to other airports.

Q. Have you found that the military's taking over certain airports has been justified from your standpoint?

A. Well, when you're getting thrown out of your house there isn't much that can justify the action in your own opinion. Many of our affected members feel very strongly that there is no justification for it. Hardship cases have not always been a case of being thrown off airports. One case came up where the military decided to install large gas tanks for jet fuel storage right where the fuel and power lines ran into a privately-owned corporation hangar and it cost the corporation $16,000 to re-locate its utility services and it had to pay for this out of its own pocket. It is not always a case of total utilization of the airport. It is the utilization of facilities which you may have on an airport. We feel that tactical military operations, particularly with jet aircraft, at civil airports increase the hazards, and should not be permitted.

Tremendous Improvement

Q. In larger cities, such as New York, Chicago, etc., do you feel that corporation planes should use the major airports, or should they use fields where there is no scheduled airline traffic?

A. Looking at the kind of aircraft we have and the manner in which they are operated,shows that we must use the same airports. We can't be shunted off to smaller air-

ports. We must have transportation, weather facilities, radio and all navigation aids not available at smaller airports. I think, actually, that corporations would prefer to go to some other location if the facilities were adequate.

Q. At larger airports, do you find servicing and maintenance facilities adequate for the corporation user?

A. The improvement has been tremendous at airports in general. There are still many specific cases which are very poor but the improvement is quite evident and I think it has been due in a large measure to the efforts of the Association in calling the attention of airport operators and fixed base operators and others to the importance of the corporation aircraft flying into their airports and getting them to plan for their needs and requirements.

Q. Does any large user have his own maintenance base?

A. Yes. There are a few maintenance companies that provide the kind and quality of service required for corporation aircraft but there are not enough. The result is that a great many corporations have set up and are providing their own maintenance.

Q. What are pilots' opportunities after their flying days are over?

A. A corporation pilot has the opportunity to meet and become well acquainted with more top-level management people in the business than anyone else. He, therefore, has good contacts already established if and when his flying might be ended.

Job Security

One company I know of has established the policy that a pilot who has to stop flying for reasons beyond his control will be offered a job at not less than 60% of his salary as a pilot if he has been with the company for five years. If he has been with the company 10 years or more the rate is 100% of his pilot's salary. Such job security is of paramount importance to pilots.

Q. Are your members having any trouble securing competent pilots?

A. We're running short of qualified pilots. If the growth in corporation flying continues there will be a very serious shortage of qualified pilots. I think an examination of the facts will show that the corporation pilot has to meet certain requirements that are not present in *airline or military flying*. The corporation pilot has no route or schedule and may be called upon to go into any airport any time without prior notice or practice at that airport. In one case last month, I examined a pilot's record and he had made 22 instrument approaches at airports across the United States and in nine of these cases he had never been in the airport before in his life. He has no dispatcher, no ground crew at every place he lands. In addition to being a pilot he has to be all these other things and a diplomat as well.

Q. Does use of corporation aircraft detract from the business of the airlines?

A. Definitely not. Just the opposite is true. The corporation airplane is probably the best salesman the airlines have, and I hope they recognize it as such. We are not in competition with them. I'd like to cite some figures from a survey we made. We asked several corporations what happened to their scheduled airline travel after they purchased their corporation airplane. It went up from 300% to 800% in dollar volume thereafter. Further, we found that of the new users of air transportation on the airlines—people who had never flown before—over 85% of them had received their first ride in the company plane.

Q. At the Institute of the Aeronautical Sciences meeting recently you gave some figures on the number of airports not served by airlines into which your corporation aircraft have flown. Would you care to say something on this subject?

A. There are over 6,000 airports in the United States, but if we eliminate duplication, where there is more than one airport serving a community, say there are 4,000 airports that we can use with the corporation aircraft in the United States. On the other hand, the scheduled airlines adequately serve only about 500 communities in the U. S., so for every place you can go on an airline, there are eight places you can go with a corporation airplane. In my own company's experience with the use of our aircraft, we visited 240 cities last year, of which 168 had no form of scheduled air transportation.

Q. Are the Civil Air Regulations in any way hampering corporation users? Do you suggest any changes?

A. I think the Civil Air Regulations are not particularly handicapping to corporation operators. I believe that in the actual operation of the Federal Airways system considerable improvement could be made by establishing some means of giving identity to the corporation aircraft so that it can obtain the same clearances and expeditious traffic handling and the other facilities given to the airlines. We have submitted a definite program to CAA to attain this goal but it has not been accepted as proposed.

Q. What is the accident rate among corporation users?

A. Due to the fact that corporation flying has not been recognized as a separate segment of aviation, no specific statistics that I know of are available. The only thing I can say is what the insurance companies tell me, and since they have a tremendous financial interest in corporation flying they are pretty keen on what the risks are. They say it is the best insurance risk they have in the aviation field. Ironically, I think one reason why corporation flying has not been more or generally well known has been its very excellent accident rate. I would say that the unit used in reporting accidents on a passenger-mile basis such as is used for airlines is not a comparable index for corporation flying.

Q. When you, as a representative of your company, call on a customer using your own airplane, is that practice in any way contagious? We mean has that ever resulted in a customer going over to the use of a corporation plane?

A. Yes. I think one of the reasons for the rapid growth of corporation flying has been the passing on of experience from one business man to another. It has also been a case of the one getting there fustest with the mostest getting the business. One other reason is that there is a shortage of highly skilled management personnel, whether they be in sales, engineering, or otherwise. Being able to make more effective use of the personnel they have through use of an airplane, many companies have increased effectiveness in sales, production, costs.

I know of one case where a company received a million dollar order, the largest order of its kind ever issued in that particular field, because the salesman had the airplane and was able to spend more time with the customer by being able to set his own schedule rather than having to rush his sales contact.

The airplane has now become a tool in business. You won't find a great deal of talk by businessmen about their airplanes, any more than you will find them talking about some other outstanding new tool in their business. That's just progress. I think that this attitude is one of the best things that could happen to the aircraft industry. This viewpoint of business towards the airplane is very significant and warrants serious consideration by all segments of aviation.

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News In Flight

Trans World Airlines shows one of its newly-certificated Super Constellations.

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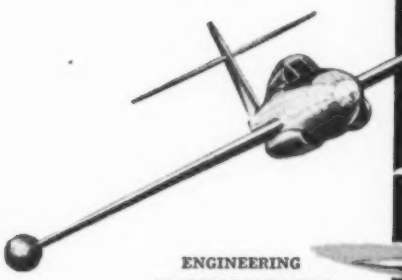

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What Price Pressurization?

By Ludwig Lederer, M.D., Ph.D.

(This is the second of a series of articles on aviation medicine.)

THE PRESSURIZED cabin airplane now in use has done more to bring comfort to the air traveler than any other new advance.

In the lower altitude levels, the pressure differential causing passengers to yawn, swallow and otherwise equalize pressures in the paranasal sinuses and the middle ear are, to a large extent, eliminated with cabin pressurized aircraft. This applies to descents made in the conventional altitudes up to 10,000 feet. The rapidity of the descent is also a very important factor, especially to the first rider or one suffering with a cold.

De-aeration Easier

It is a well known physiological fact that de-aeration is more easily performed by the passenger than re-aeration of the sinuses and middle ear. The rate of ascent permitted is 500 feet per minute and the rate of descent is supposed to be held to 300 feet per minute for the same reason. However, these rates have been varied for traffic and safety reasons in many instances.

The "drippy," "mucousy" secretions associated with a cold clog up the air tracts between the sinuses and the nose and the eustachian tube which connects the throat with the middle ear. Clogging of these tracts results in earache, temporary deafness, and headaches on descent.

Cut 50 Percent

In a survey conducted on over one million passengers by the author in a one-year period, the incidence of colds was approximately 5.0% in the 11,000± passengers who sustained discomforts of all kinds. Approximately 3.0% of the same group suffered from temporary deafness on descent. This study was conducted on non-pressurized type aircraft. The new type pressurized aircraft, from a cursory survey, seem to have cut these figures by at least 50%.

At altitudes above 10,000 feet, physio-chemical changes begin to occur.

One of these changes deals with the proper oxygenation of the tissues of the body. A common saying is that the oxygen decreases as one ascends. This is technically not true. The pressure does decrease but the relative percentage of oxygen, at least within the troposphere, the tropopause, and part of the stratosphere, does not change percentage-wise.

Composition of Air

	Percent by volume
Nitrogen	78.09
Oxygen	20.95
Rare Gases	(about) 0.94
Carbon Dioxide	(about) 0.03

Thus, it may be said that air is just about like baloney: no matter how thin you slice it, it has the same composition. One readily sees that ascent into upper levels decreases the percentage of atmospheric pressure. As an example, if sea level is equal to 760 mm. of mercury pressure, at 10,000 feet the pressure is 522 mm.; at 18,000 feet it is exactly 50% of atmospheric pressure or 380 mm.; at 53,000 feet it is 10%, or 76 mm. of pressure.

Hypoxia Sustained

Now the oxygen which circulates in our blood stream is also under pressure. Referring back to our table of the composition of air, one can roughly say that 4/5 of air is nitrogen and 1/5 is oxygen. If air is at 760 mm. pressure, 1/5 of that is approximately 152 mm. That is the pressure at which oxygen circulates in our blood stream, at about 20 volumes percent.

It is readily seen that ascent above 10,000 feet for any prolonged period makes it difficult for oxygen to enter our blood streams through the lung tissue, because of the decreased pressure of oxygen at that altitude. Factors such as smoking, activity or work, age, chronic lung disease, decreased heart activity, and many others all enhance this condition and cause further decrease in oxygen uptake. This condition of decreased oxygen uptake results in what we call *hypoxia.*

Hypoxia at moderate altitudes, say 10-12,000 feet, can be sustained by the average individual at rest without much subjective discomfort. However, if this condition obtains for any great length of time, it has telling effects. Many of our passengers can well tell us how they felt after a long transcontinental air trip of a decade ago, when the only solution was a 24-hour stay in bed at the conclusion of the trip in order to dispel the fatigue induced by the so-called subclinical hypoxia!

The pilot of today is becoming very oxygen-conscious, due to training and observance of company and CAA regulations which call for oxygen supplemented by mask intake when the pilot flies at 10,000 or above for 30 minutes or more. Some medical departments of air lines have lowered that limit to 8,000 feet and many recommend oxygen from the ground on up at night. The older pilot also finds that his efficiency is increased and his post-flight fatigue decreased by ample supplemental oxygen.

Below 10,000 Feet

Now the pressurized cabin airplane has changed this picture quite a bit. The cabin pressure can be maintained well below 10,000 feet and, in many instances, the altitude of the cabin can be set in flight, gradually, *to equal* the altitude of the airport for which that plane intends to land. This maneuver of keeping the passenger "on the ground" while flying is the greatest physiological boon that aviation has developed for both passenger and crew.

The maintenance of cabin pressure was not an easy problem when this type of aircraft was first put into use. Failures in pressurization have been known to occur due to a number of causes. If the superchargers have to be disconnected for any reason, then pressure cannot be maintained or even initiated. The pressure differential between the cabin and the outside atmosphere varies according to the discrepancy between the two altitudes. Most of our larger planes today can maintain a cabin altitude of approximately 8,000 feet while flying at 20,- to 22,000 feet. Likewise, they can maintain almost sea level altitude, in many instances, up to 10,000 feet. Such performance causes little or no physical changes on ascent and descent and practically no physico-chemical changes of the oxygenating system in the human body.

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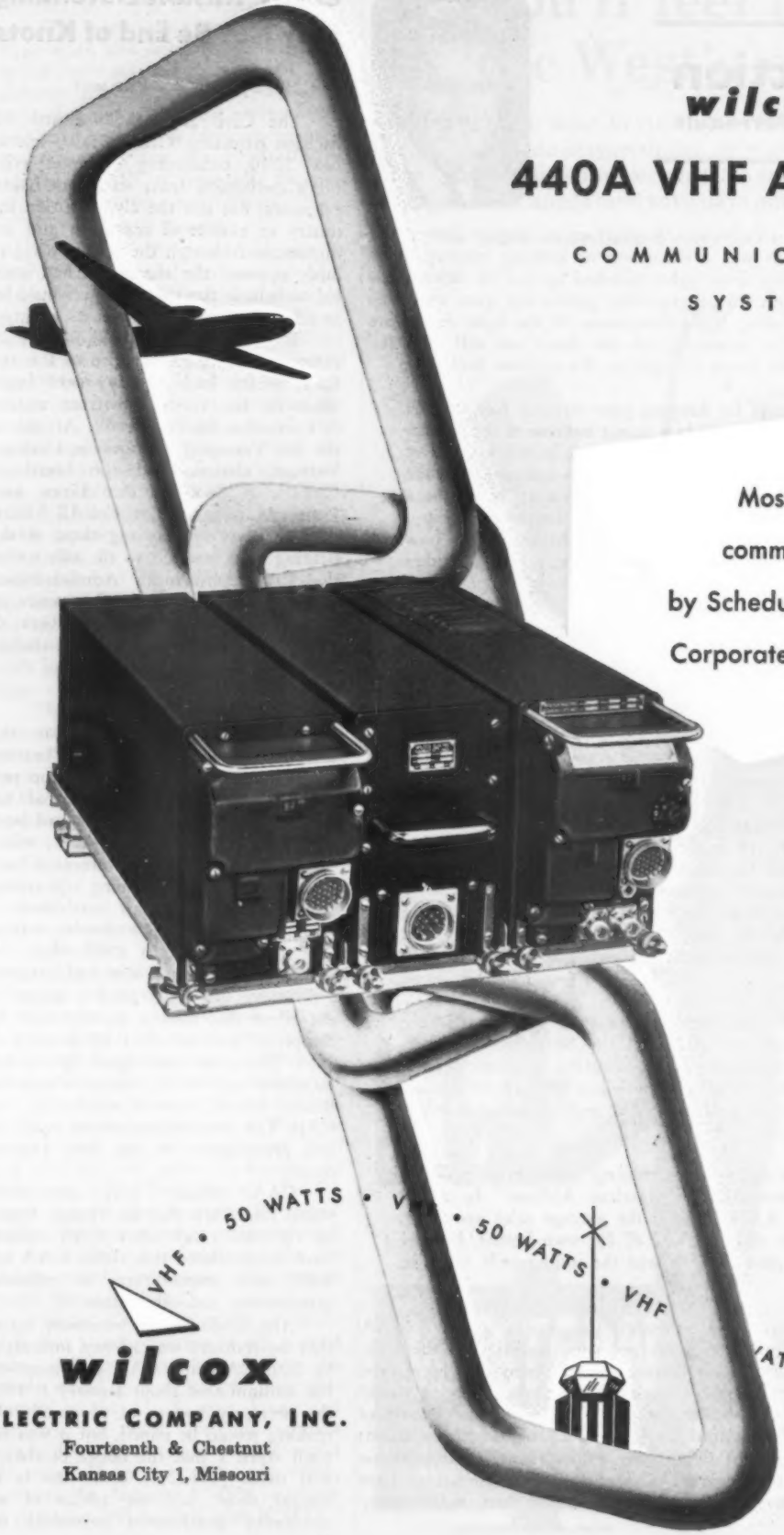
440A VHF AIRBORNE

COMMUNICATIONS

SYSTEM



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Advanced techniques and design are used to insure a maximum of performance and reliability with minimum maintenance time and expense.

Covers all 180 channels (118-136 mc/s) assigned to world-wide Civil Aviation—your protection against obsolescence.

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Extra Section

By William D. Perreault

ON THE LIGHTER side of the American Association of Airport Executives' lighting conference at Columbus was a discussion of keeping runway lights clear of bird dung. Attempts to keep those lights polished up can be defeated by a flock of birds in short order. With true engineering genius one man suggested that the real solution lies in controlling light dimensions. If the light domes are small enough, the bird can't rest his weary legs on the dome and still dirty the light. This might call for a pin-point source of light for the sparrow flocks.

•

A good practical suggestion for keeping your airplane free of bird nests, while we're on the subject, appears in a recent bulletin of the Minnesota Department of Aeronautics. After a serious review of the hazards of mice, squirrels, and birds when the pilot or mechanic is not careful in the storage and maintenance of the aircraft, the bulletin warns: "Don't be a 'bear for punishment.' If you can't inspect the aircraft frequently, keep a small cat in each wing." Seems like a sound deal for the wings, but how about the vertical stabilizer of the DC-4's and DC-6's, and those other spots where the cat's apt to need companionship?

•

The Flight Engineers' International Association, under the leadership of president William D. Kent, is doing an increasingly effective job for the flight engineers. One recent effort has been to have Civil Air Regulations recognize flight engineers in the regulatory information now specifying pilot responsibility for many tasks performed by flight engineers. FEIA is using a slogan reading "Air Safety Through Engineered Flight" on all envelopes of Association correspondence. Members have also been asked to identify their work in general correspondence, i.e., Jim Jones, flight engineer.

•

Average number of passengers carried per aircraft increased from about six in 1938 to 17 in 1947, 19 in 1950, and 23 in 1951, according to the International Civil Aviation Organization. ICAO noted that average seating capacity of transport aircraft appeared to have more than doubled during the period from 1938 to 1946, but increased only about 30% from 1946 to 1951. It might well be that this trend will again move upward with the introduction of the current series of enlarged transports with additional coach-type interiors.

•

Speaking of enlarged aircraft, Lockheed has come up with some interesting figures regarding the revenue producing ability of the 80 inches added to the fuselage length in the Super Constellation. Accommodating 8 standard passenger seats, this "richest 80 inches in the world" will produce $365,284.80 per aircraft per year based on 2,920 hours annual utilization, 280 mph cruising speed, and a passenger fare of 5.6 cents per mile.

•

American Airlines provides some interesting statistics on pilots in its passenger booklet "Welcome Aboard American Airlines." In a box entitled "Pointers on Pilots," AA notes that the average pilot age is 34, 88% are married, 73.9% have children, and 47.2% own homes. Further on they add that 355 of the pilots have passed the million-mile mark in schedule flying.

•

While American's passengers thumb through the general review of AA operations, the Trans World Airlines passengers get some statistics on the Constellation from an item called "Constellation Conversation": There have been some 8,000 modifications or improvements to the Connie since its conception; it would have taken one man 5,500 years to complete the nearly 11 million man-hours of specialized engineering effort that went into the first version of the Constellation; and more than 4,670 hours of prototype flying were accomplished on the Connie before the first paying passenger was carried. Operationally, Constellations have flown more than 10 billion passenger-miles, including more than 30,000 trans-Atlantic crossings.

Costly Misunderstanding May Not Be End of Knots

By Lois C. Philmus

The Civil Aeronautics Board 3-2 decision rejecting CAR Draft Release No. 52-10, concerning domestic aviation's conversion from statute to nautical miles, has left the civil aviation industry in a state of confusion and indignation. Although the industry vigorously opposed the change, it had been led to believe that the change would be in effect July 1 regardless of its feelings.

The public hearing held on May 29 came as a complete surprise to the airlines, which had already spent large sums on the conversion from statute to nautical miles. Milton W. Arnold of the Air Transport Association, Carleton Putnam, chairman of the board of Chicago & Southern Air Lines, and Robert M. Love, president of All American Airways were among those at the hearing who testified to the effect that the Civil Aeronautics Administration and the Air Coordinating Committee, as well as individual staff members of CAB, had assured them that the change would be in effect by July 1.

Legality Questioned

CAB members Oswald Ryan and Joseph Adams, sitting at the hearing with Chairman Donald W. Nyrop presiding, questioned the legality of the industry conforming to what had been stated by the CAA and ACC, when the CAB was the only government body authorized to make a ruling concerning civil aviation and put it into effect.

Here is how this expensive misunderstanding arose: In 1950 when the ICAO first suggested world-wide standardization, the ACC filed a paper to the effect that such a move would be completed and in effect by January 1, 1954. The paper was signed by the top members of ACC, which included Russel Adams, then a member of the CAB. The actual commitment to ICAO was promulgated by the State Department.

CAA officials have continually stated since then that the change would be in effect, and other CAB officials have substantiated this claim. CAA has itself made expenditures in bulletins, instruments, and other tools.

Arnold, during his testimony, stated that the industry was advised informally by both CAA and CAB staff members last autumn that about January 1, 1952, the necessary notices of proposed rulemaking would be issued, but it was not until April 1 that the notice of change was made public. In order not to be caught short, and on advice of authoritative government personnel, the

airlines, during the interim, had taken the necessary steps to convert.

The Aircraft Owners and Pilots Association, also violently opposed to the switch, substantiated these claims. The industry felt the futility of its efforts to combat the ruling and assumed that the only alternative was compliance. As recently as late March, AOPA requested the ACC to reconsider the matter, but its request was rejected.

Stand Reversed

Donald W. Nyrop's dual role as Board chairman and chairman of ACC further clouded the issue. For example, in a letter replying to AOPA's request and published in AOPA's newsletter to its members, Nyrop stated: "It would hardly be worthwhile to ask the committee to reconsider its previous decision . . . the Federal agencies concerned are proceeding to establish the nautical mile as a U. S. aviation standard to become effective on July 1, 1952." This letter was signed by Nyrop in his capacity as chairman of ACC, but it is easy to see where the industry could interpret his stand as indicative of his opinion as CAB chairman. Nyrop, however, voted along with Adams and Ryan to kill the measure with Josh Lee and Chan Gurney dissenting.

The U. S. commitment to ICAO, plus wording of the CAB ruling, which states that the proposal was rejected because "there is insufficient justification *at this time* to warrant adoption of the proposed changes," indicate that the matter may not be closed, however.

It is possible that in about a year, when the problem is reevaluated and new evidence weighed, a new resolution will be broached.

Still dazed by the sudden turn of events, the airlines are sitting tight. They are not spending any more money at this time to convert back. According to Arnold, it would cost the carriers more to change back than to continue. But neither are they continuing.

The ATA stand has been—and still is—that its main objection to the conversion was not the conversion itself but the lack of proper evaluation by CAA and ACC. Tom Bernard of ATA states that if the necessity for standardization were to be properly explained to the industry's satisfaction, the industry would reconsider the matter under the new light.

Charles Carey, secretary of ACC, feels that standardization is still a good idea. It doesn't matter whether the whole world goes miles per hour and statute or the U. S. goes knots and nautical, but some sort of common standard would certainly simplify world air travel. If no new plan is in effect, however, by January 1, 1954, a paper of deviation will be filed with ICAO.

You'll feel at home on "the West's own airline"

When you want to visit one of the West's national parks or scenic playgrounds...or when you want to cover any of the 46 major markets in the 13 western states and Canada (and save days and dollars doing it!)...

be sure your ticket says "via Western Air Lines"!

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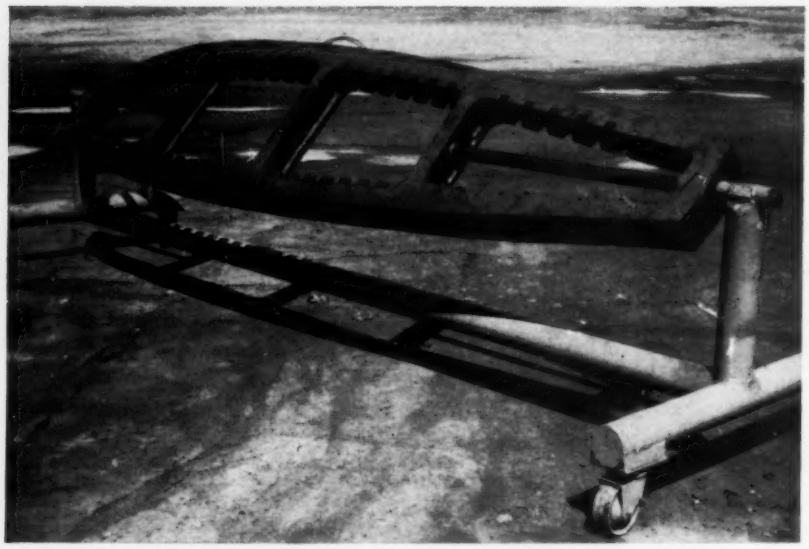
Western offers fast, frequent Air Coach flights between San Diego and Seattle, and from Los Angeles to Las Vegas, Nevada.

Maintenance Bulletin Board



Dual purpose jig for checking attach angles on DC-3's was designed by Delta Airlines' F. W. Borrish and constructed of one inch steel plate planed to ¾ inch. Special design permits control of waffle plate clearance. Unit costs about $1200 including stand.

Delta Farms Work To Outlying Stations

During 1951 the five mechanics working Delta Airlines' New Orleans station made up some 700 cable assemblies for the aircraft control systems. The work averaged about 2.24 man-hours per week.

The unique side of this story is that Delta gets this work virtually free. Delta has successfully worked out a program for sending various types of parts work to these outlying stations to help take up the slack in the day's schedules where peak loads require maintenance crews in excess of hour-by-hour requirements.

Cables are just one example. At Miami the fleet service group operates a system laundry, handling all laundry normally sent out by most airlines. At Charleston, S. C., flexible hose assemblies are manufactured; at Shreveport seat belts are assembled; at Cincinnati all spark plugs are overhauled.

Delta's system has been made as simple as possible. Economy of operation is an important factor but certainly no more than the quality of work which results from the pride of workmanship shown at these stations responsible for a given phase of the program. Reports of trouble with a cable assembly, for instance, will bring lead mechanic A. J. Benintende, who handles the New Orleans station, into the base at Atlanta post haste and unannounced.

At Charleston three mechanics plus lead man Frank Taylor, Delta's number one maintenance employee seniority-wise, make up all detail hose assemblies. Delta overhauls about 25 engines a month. During teardown the complete hose cluster is sent Comat to Charleston and all parts inspected and replaced as required. This same station, handling four originating and four terminating flights per day, also makes up DC-3 landing gear pins and the wheel flight brake used in each nacelle to stop wheel rotation after the gear is retracted.

Morale Raised

It used to take two men full time to handle spark plug overhaul for Delta's fleet. Now, under the direction of lead man R. F. McIntyre, the four mechanics at Cincinnati handle the entire project in time that would otherwise be lost. The increased work also raises morale.

V. J. Thomas' group at Shreveport was virtually put out of business when CAA called for new seat belt strengths. All new belts were installed and the repair and replacement business was temporarily cut way down. Now plans are going ahead to set up equipment for making all cockpit placards there.

Delta's Superintendent of Maintenance, G. J. Dye and his right-hand man R. G. ("Bob") Johnson set up the program several years ago with the Cincinnati operation. Its success led to the expanding program. Now the program is handled virtually automatically, with Johnson keeping an eye on overall functions. Once the operation is established the stations simply keep up their specifications sheets and order replacement parts via the stockrooms at Atlanta.

Window Crazing Cleaner Report Clarified

Information appearing in the Maintenance Bulletin Board of April 14 regarding damage to the DC-6 outer window panels was unintentionally misinterpreted by AMERICAN AVIATION and should be clarified.

American Airlines uses several cleaning agents and among these is Turco Airmulso, a non-staining, non-crazing cleaner meeting Air Force Specifications 200015-E. The airline also uses heavy duty carbon removers to clean the exhaust stain areas around the nacelles.

Different Agents

The Maintenance Bulletin Board failed to distinguish between different types of cleaning agents in reporting that window damage had been traced to Turco cleaners used on the nacelles and cowling not thoroughly rinsed prior to starting the engines and blown back across the panels.

In view of the fact Airmulso is specially blended to be non-crazing and also fulfills the Air Force's specifications on this score, the article should have noted that the window damage could not have been done by the Turco cleaner normally used for washing down planes. It also is a well known fact, of course, that carbon removers which are used to remove exhaust stains are strictly heavy duty materials that can be damaging to plexiglass. It is the custom to request personnel to exercise care in their use.

AMERICAN AVIATION is publishing this explanation to make it plain that Airmulso has not been the cause of window damage.

Today, Guardian Angels Fly an ALBATROSS

Grumman

Meet two guardian angels on the wing. Ahead, in the night, lives will be saved. Perhaps the survivors of a capsized sailboat on an inland lake, or a bomber crew downed on a hostile shore, or critically injured seamen on a tanker far at sea. Such are the missions performed in every corner of the globe by Air Rescue Crews of the Air Force. The big amphibian they fly is the versatile and rugged GRUMMAN ALBATROSS.

Originally developed for the Navy, the ALBATROSS is now operated by that service, as well as the Air Force and the Coast Guard.

GRUMMAN AIRCRAFT ENGINEERING CORPORATION, BETHPAGE, LONG ISLAND, NEW YORK

Contractors to the Armed Forces

Typical Engine Overhaul Cost*

(Per Flight Hour)

Pratt & Whitney R-1830

Airline	A	$ 2.00
Airline	B	$ 2.45
Airline	C	$ 2.00
Airline	D	$ 1.47
Airline	E	$ 2.03
Airline	F	$ 3.32
Airline	G	$ 2.50
Airline	H	$ 2.62
Airline	I	$ 3.37

Pratt & Whitney R-2800

Airline	A	$ 4.78
Airline	B	$ 7.00
Airline	C	$ 6.00
Airline	D	$ 3.24
Airline	E	$ 5.00

Pratt & Whitney R-4360

Airline	A	$ 5.90
Airline	B	$15.96
Airline	C	$ 9.42

Pratt & Whitney R-2000

Airline	A	$ 1.75
Airline	B	$ 2.39
Airline	C	$ 2.29
Airline	D	$ 2.50
Airline	E	$ 3.14

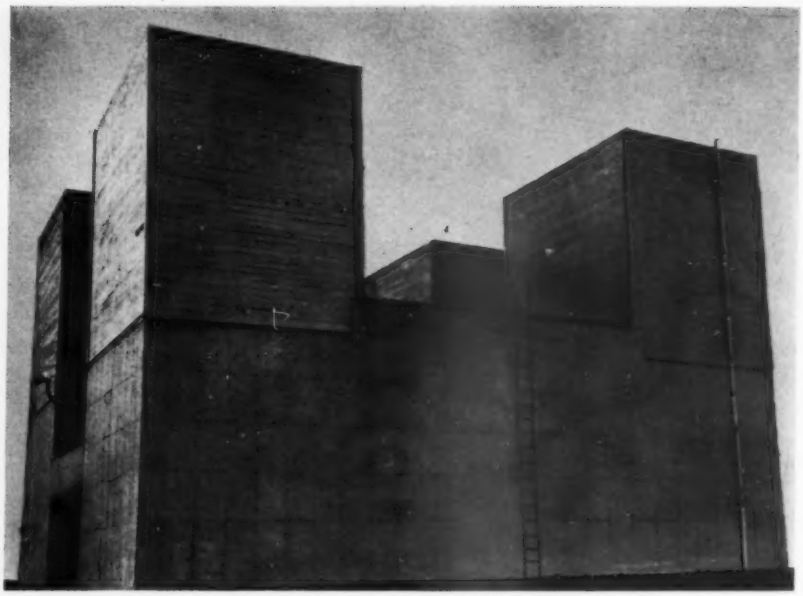
Wright Aeronautical R-1820

Airline	A	$ 0.45
Airline	B	$ 0.76
Airline	C	$ 2.00
Airline	D	$ 4.50

Wright Aeronautical R-3350

Airline	A	$ 7.11

** These figures were compiled by an AMERICAN AVIATION survey. Differences in airline accounting procedures are considerable, particularly variations in whether major items of overhaul (crankshafts, cases, etc.) are capitalized and depreciated over a period of time or simply charged against the current month's overhaul costs. Such variations prevent these figures from being strictly comparable.*



ENGINE TEST STAND in form of block letter "H" has ventilation towers 35 feet high. The two long sides of "H" are test tunnels.

Engine Test Stand Combines Features

AN ENGINE TEST stand said to be the most modern in the U. S. was recently completed by Dallas Airmotive, Inc. Built to test two engines simultaneously, the "H"-shaped structure features noise reduction.

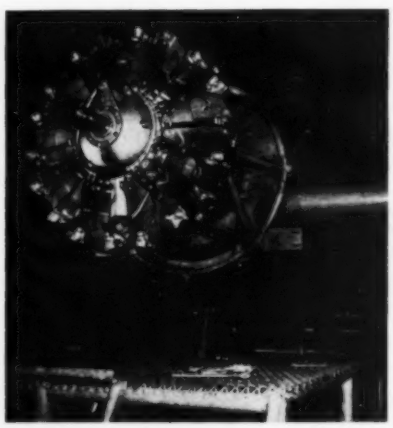
Wall and ceiling construction consists of 12 inch reinforced concrete, and control of noise level is effected by two means: suspension of engine on a cable-supported mount, and installation of ventilation towers vertically honeycombed with heavy fiberglass acoustic panels.

Air drawn down through one of two towers on each cell by propeller passes through and around engine as in flight, and is exhausted up and out other tower.

Design and construction of the test stand was supervised by W. P. Ramsey, following investigation of many such installations in the U. S. and Europe.

Final design was partly original and part a combination of the best features of those inspected by Ramsey.

Adaptability of the stand ranges from the small radials to the largest airline and military engines. Dallas Airmotive, headed by Henry I. McGee, Jr., recently contracted with Pioneer Air Lines to overhaul P & W CA-18 engines for their Martin 202's.



CABLE MOUNTING absorbs engine vibration normally transferred to walls.

ACOUSTIC PANELS of heavy fibreglass fill interior of ventilation towers.

AEROTHERM AIRCRAFT SEATS

offer you luxurious comfort day and night . . . servicing is quick and easy anywhere!

The most complete line of standard designs and new, improved aircraft seats is available to you now with reactivation of the Bantam plant (formerly Warren McArthur Corp.) by The Aerotec Corporation and The Thermix Corporation.

Your passengers ride confidently in Aerotherm Aircraft Seats. Each design combines the comfort and safety features proven most desirable by airline experience. These seats also have gained enviable records for easy, low-cost maintenance.

An example is the Aerotherm Model 406D double passenger aircraft seat shown here. Seat and reclinable back (maximum 62°) are cushioned with body-fitting foam rubber for comfort day and night. This model, designed for use in DC-4 type aircraft, offers a choice of upholstery and finish to suit your taste. Frame structure is of strong, lightweight aluminum and magnesium alloys. Optional features include food tray brackets, leg rests, and life jacket pocket.

When faced with the problem of seating your next ship, consult our engineers who have had wide experience in serving other leading airlines. Write today for descriptive literature on Aerotherm Aircraft Seats.

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Bench Model Plater occupying only a 2′ by 3′ space, this self-contained hard-chrome-plating unit, the Cro-Plater "100," has been announced by the Cro-Plate Co. of Hartford, Conn. All controls, transformers, rectifiers, switches, and heating elements, including the plating tank, are contained within the unit. Address: The Cro-Plate Co. Inc., 747 Windsor St., Hartford, Conn.

Upright Cabinet for filing tracings, blueprints, etc., has been placed on the market by the Empire Development Corp. It is designed to improve office appearance and to provide a safe, convenient, and orderly means of filing large prints. Address: Empire Development Corp., 15 Park Row, New York 38, N. Y.

Ready For Winter. A new readily detachable combination snow plow and salt bin attachment is available with Yale's standard 2,000 lb. capacity, gasoline-powered fork lift truck. Attachment clamps on forks can be converted for routine fork lift operations in a matter of minutes. Address: Yale & Towne Mfg. Co., Philadelphia 15, Pa.

New Products

Versatile Radio

A self-powered, all purpose portable aircraft radio which provides for VHF transmitter functions, range frequencies and standard entertainment reception is available from Mitchell Industries, Inc.

Known as the Mitchell Airboy, Sr., the new unit is 6 by 4½ by 5 inches in size and weighs 5½ pounds including a built-in loudspeaker and battery pack. It can use a 25½ inch whip antenna or attach to the VHF antenna. It is powered by two "B" batteries and two flashlight batteries. A converter makes it possible to plug it directly into 110-volt a.c. lines. One of the three crystals is tuned to 121.5 megacycles, the emergency wave length, while the others are optional to meet user requirements.

Address: **Mitchell Industries, Inc.**, P. O. Box 17, Mineral Wells, Texas.

Measuring Aid

A new product for making linear measurements on machine tools called Scan-A-Scale is offered by the F. T. Griswold Mfg. Co. of Wayne, Pa. It consists of two microscopes and two satin chrome finished scales graduated in 50 thousandths of an inch. By rotating the dial on the microscope the graduations can be divided to provide readings to four decimal places.

Uses for Scan-A-Scale include controlling jig borer table movement and boring head location, positioning lathe carriages longitudinally, locating a milling machine table in respect to the spindle, and positioning a cylindrical grinding machine table in relation to the side of the wheel.

The product is offered as optional equipment by some machine tool manufacturers to speed measuring operations, increase accuracy, and permit more flexible machine use.

Address: **F. T. Griswold Mfg. Co.**, Wayne, Pa.

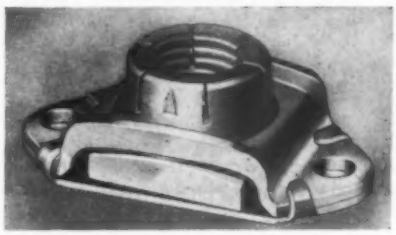
Temperature Tester for Jet Engine Controls

Testing of engine and aircraft accessories over a range of temperatures from plus 400° to minus 150° Fahrenheit is possible with the new Beltemp Multi-Zone Industrial Temperature Testing Machine.

Primarily developed for the testing of jet engine controls, it is available for single temperature arrangements or multiple temperatures. Available for use with 110, 220, and 440 volt sources, the Beltz unit uses Dow Corning Silicon fluids as wetted baths.

One bath in the unit shown is maintained at 5° above room temperature, or between 80°-100° F. The middle well maintains accurate temperatures of plus or minus ½° through the range of zero to minus 75° and the other operates at any preset temperature of 100°-250° Fahrenheit.

Address: **Beltz Engineering Laboratories**, 11021 Whittier Ave., Detroit 24, Mich.



Floating Anchor Nuts

An Anchor nut designed to save installation and maintenance time is being manufactured by the Nutt-Shel Company of Glendale, Cal. The nut floats 1/32" in all directions, making it unnecessary to locate it accurately over the bolt hole. It is designed to replace AN366F-AN362F fixed-type anchor nuts, and reportedly meets the applicable requirements of Spec AN-N-10.

The nut is cadmium-plated carbon steel and push-off/torque-out tests failed the attaching 5/32 A17ST aluminum alloy rivets without damage to the nut, manufacturer states.

Address: **Nutt-Shel Company**, 811 Air Way, Glendale 1, Calif.

Moderate-Cost Caliper

A high-quality vernier caliper manufactured by Eskilstuna Tools of Sweden is now available at approximately half

Leadership demands constant achievement

NINE OUT OF 10 JET FIGHTER PILOTS TRAIN IN LOCKHEED JETS

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U. S. JET PILOTS have an outstanding superiority in skill that comes from rigorous, thorough training.

In nearly every instance America's flying sons make their first jet flights and attain their skill in a Lockheed jet—selected as the standard fighter-trainer by the U. S. Air Force, Navy and Marine Corps. Allied pilots, too, are taught in these jet trainers—pilots from Holland, France, Denmark, Norway, Belgium, Greece, Turkey, Portugal, Canada.

Lockheed developed this two-place jet trainer from America's first jet fighter, the battle-tested Lockheed F-80 *Shooting Star*, proven for reliability in Korea.

America can be proud of the high standards of U. S. training, and Lockheed is proud of contributing the airplanes used to train the world's finest jet pilots.

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In developing great aircraft Lockheed develops fine engineers. For information about Lockheed's unique on-the-job training program, write to: Engineering Dept., Lockheed Aircraft Corp., Burbank, Calif.

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SUPER CONSTELLATIONS TO GET TURBO-PROPS

The U.S. Navy has selected the new R7O-1 Super Constellation as ideally designed for vital conversion to turbo-prop power. Only minimum modifications are required, according to BuAer. No structural changes of the empennage, fuselage or basic wing are necessary.

Significance to airline operators is that Super Constellations with Wright 3250-h.p. compound engines can later be converted to turbo-props. This conversion to Pratt & Whitney T-34 Turbo Wasp engines will put the Super Constellation in the 450-mile-per-hour-class.

The Super Constellation offers any airline operator any performance he desires, from high-density coach travel, to luxury over-ocean travel, or it can be used for efficient, economical cargo purposes.

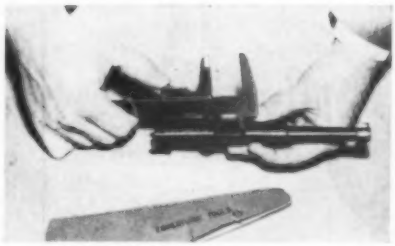
Never before has the basic structure of any aircraft provided so adequately for *growth*, assuring the operator many years of competitive performance. Compared with any of today's certificated aircraft the new Super Constellation is superior in versatility, speed, payload, range and ability to earn greater profit.

NEWS NOTES FROM LOCKHEED

Eight international airlines have now ordered Super Constellations—most recent: Seaboard & Western Airlines and Braathens S.A.F.E. Air Transport ... With Navy and Air Force orders, the total demand now exceeds 200.... A new "White House Squadron" of Lockheed F-94 All Weather Jet Fighters is guarding Washington, D.C. ... Lockheed is occupied with aircraft using six different kinds of power, including reciprocating engines, turbo-props, jets and rocket power.... For pilot comfort every Lockheed jet fighter has a cockpit cooling system equivalent to 100 household refrigerators.... The single Allison jet engine in the Lockheed T-33 jet trainer is more powerful than all four engines of the B-17 bomber of World War II fame.... Pilots of many nations learn jet flying in Lockheed T-33 trainers, and recently when two T-33's were delivered to Turkey they were inaugurated in preflight Mohammedan rites including a lamb sacrifice.

FROM THE WORLD PRESS

Under the headline, "New Facts on Jet Combat," *Aviation Week* reports from Tokyo: "The Lockheed F-80 *(Shooting Star)* still is considered to be the best ground-attack jet in Korea. There is considerable belief here that development of an airplane along the proved lines of the F-80 is the answer to the interdiction-close support requirement." Thus another Lockheed design continues to prove its basic "rightness" even though more modern types have replaced it in Lockheed's production line.



the cost of comparable domestic calipers, according to the Master Rule Company, U. S. distributors.

Overall dimensions are 3" by 8". The scale is 6" in length, and jaws are 1 9/16" deep. The caliper is capable of measuring external, internal, and depth dimensions, including core diameters of threads in fractions or decimals of inches.

Address: **Master Rule Co.**, Middletown, N. Y.

Glideslope Receivers

A CAA-approved ILS glideslope receiver, designated the Model R89M, for scheduled air carrier use has been placed on the market by Aviation Accessories, Inc.

Fully interchangeable with the modified R89B units now in use, the AAI unit is used with either the Collins 37P2, Bendix MN-92 or Military AS-27A glidescope antennas. A flag alarm circuit is incorporated. Available for operation on either three or six channels with a standard frequency range of 332-335 megacycles, the R89M unit features reduced course softening in accordance with RTCA recommendations. Weight is 12 pounds, eight ounces. Dimensions: height, 7-11/16 inches, width, 5-3/16 inches and depth 13-15/16 inches.

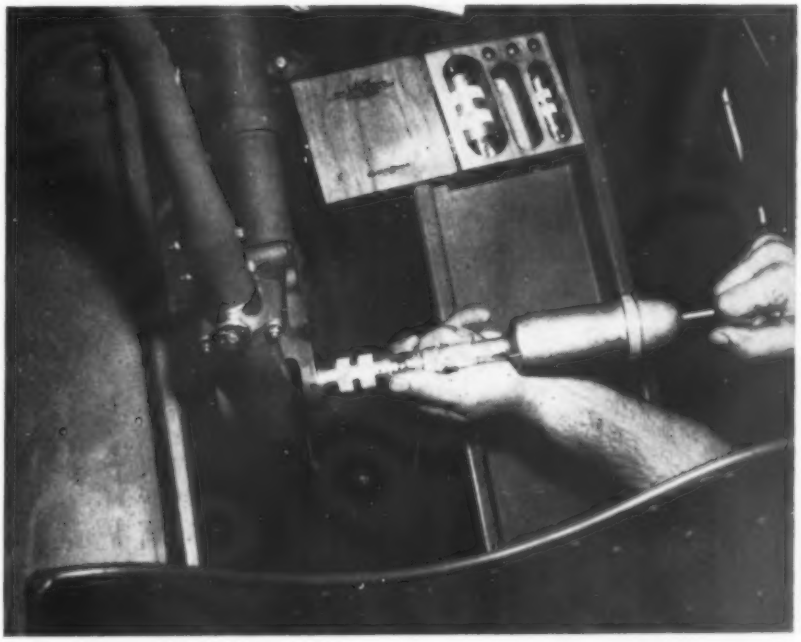
Address: **Aviation Accessories, Inc.**, P. O. Box 4178, Fort Worth 6, Tex.

Portable Tape Dispenser

A handy item for the shipping room is provided in the new portable gummed tape dispenser, Roll-On-Sealer, marketed by the Mid-States Gummed Paper Company of Chicago through paper distributors. It features a non-spilling water tank, making its use possible in any position, even upside down.

No lubrication is necessary and the only maintenance operations are refilling the water tank, rinsing the sponge, and replacing worn cutter blades.

Address: **Mid-States Gummed Paper Company**, Chicago, Ill.



Shielded Bearing Lubricator Announced

A shielded bearing lubricator and cleaning attachment, trade name E-Z-LUB has been announced by the Abetco Distributors, Culver City, Calif. It is portable and can be attached to any make of lubricating gun.

The E-Z-Lub will clean and pack bearings either in the castings or unmounted, provided that one side of the bearing is accessible. The only wearable parts are AN neoprene seals. An average operator can lubricate 25 unmounted bearings, cable pulleys, etc., per minute, according to the maker.

Address: **Abetco Distributors**, 9371 Washington Blvd, Culver City, Calif.

ELECTRONIC SCHUTTIG PRECISION

SINCE 1940 Schuttig and Company has been designing and manufacturing electronic devices to meet exacting requirements of government agencies, manufacturers and airlines. As specialists in communications, remote control and navigational equipment, both ground and airborne, Schuttig has earned its reputation for *electronic precision.*

Schuttig and Company
Incorporated
Washington 17, D. C.

Electronic Manufacturing Engineers

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Enjoy luxurious, world-proved Constellation service direct to
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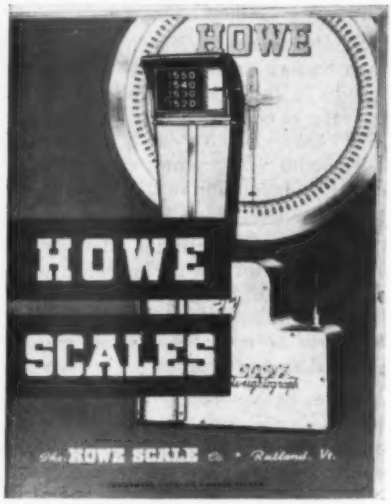
. . . the only one-airline service between 60 U. S. cities and leading centers of Europe, Africa and Asia
Also TWA Sky Tourist Constellations to Europe...at the lowest year-round fares!
See your travel agent or call Trans World Airlines
Across the U.S. and overseas... you can depend on TWA

Technical Literature

CABLE CONVEYOR SYSTEMS: The development of the "split" nut and trolley bracket assembly which enabled the successful application of overhead monorail cable conveyor systems to heavy duty, as well as lightweight materials handling, is described in a four-page folder put out by the manufacturer, Daigle-Goboury, Inc., 20175 John R, Detroit 3, Mich.



INDUSTRIAL SCALES: The 28-page Condensed Scale Catalog No. 11, prepared by the Howe Scale Co., Rutland, Vt., includes complete specifications, spot illustrations, and data for a thousand standard Howe scales weighing from 1/64 ounce to 400 tons.

•

AC WELDERS: Complete information on a complete new line of AC welders, made in 200, 300, 400 and 500 amp. ratings, is contained in a series of catalog sheets—each sheet for a different size welder—published by the manufacturer, Metal & Thermit Corp., 100 E. 42nd St., New York 17, N. Y.

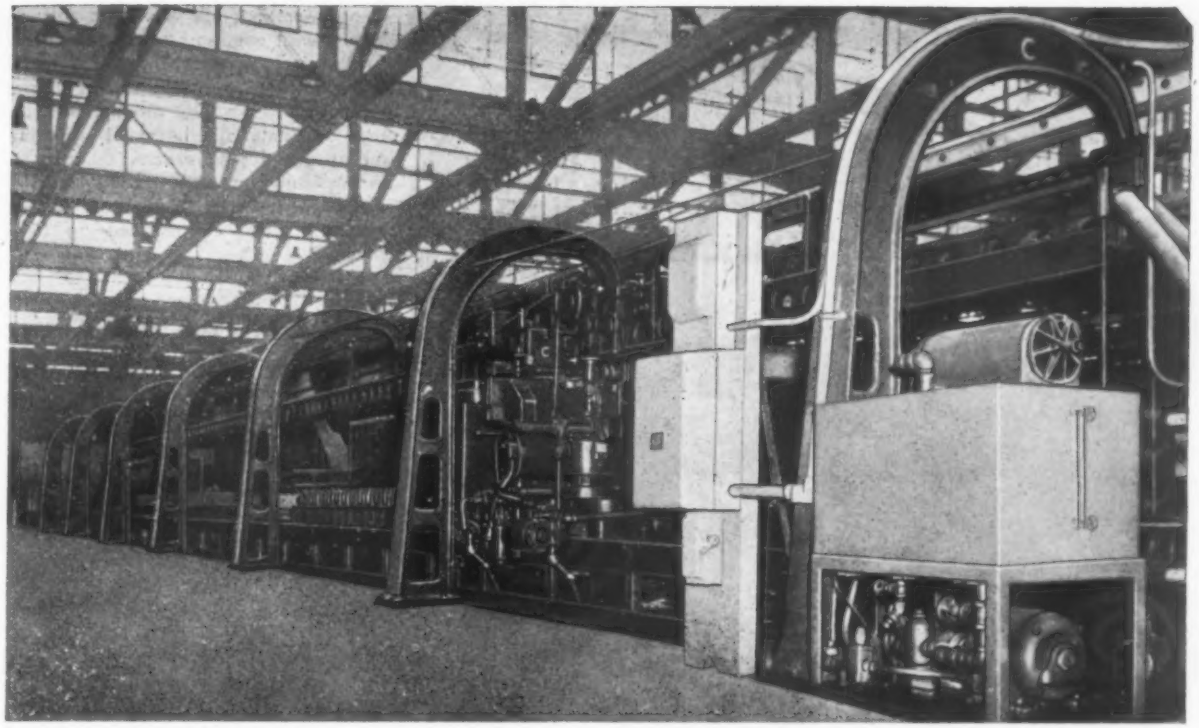
•

ELECTRONIC "POTTING" MATERIALS: Technical brochure, prepared by the B. G. Forman Co., Inc., 181 Throop Ave., Brooklyn, N. Y., describes a new group of room-temperature cure plastic casting materials for "potting" and "encapsulating" transformers and electronic assemblies. The new Forman materials are designated Polyform G series and consist of three formulas, all outlined in the booklet.

•

SURFACE PROTECTION: "New Approaches to Surface Protection" is a 12-page scientific booklet which tells how furnace refractories, metal, ceramics, and glass can be protected from extreme temperatures and destructive elements by painting them with White Hot or Pyro-Chrome, created by Preferred Utilities Manufacturing Corp., 1860 Broadway, New York, N. Y.

The bulletin describes how these coatings expand and contract like the materials to which they are applied.



Typical of Canadair's fine equipment:
a huge spar cap milling machine.

WHAT IS CANADAIR'S *Production Capacity?*

Canadair's production capacity is something that never fails to amaze the many executives of the industry and military officers visiting the plant.

It is a capacity great enough to handle the simultaneous production of 3 types of military aircraft . . . for the Royal Canadian Air Force and the Royal Air Force.

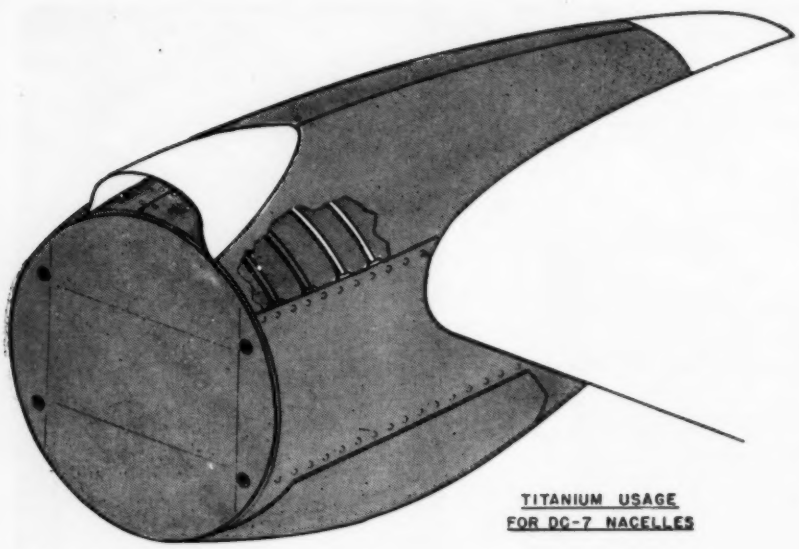
It is a capacity great enough to have built fleets of luxury airliners for Trans-Canada Air Lines... British Overseas Airways Corporation... Canadian Pacific Airlines... and military transports for the Royal Canadian Air Force.

It is a capacity that has the key production essentials . . . facilities, men, designers, engineers and experience . . . a potential of definite interest to those with future plans to buy aircraft.

Canadair
LIMITED, MONTREAL, CANADA

A subsidiary of
GENERAL DYNAMICS CORPORATION
Formerly: Electric Boat Company
New York, N.Y. — Washington, D.C.

CA52—UST



TITANIUM USAGE FOR DC-7 NACELLES

TYPICAL VIEW FOR ALL NACELLES

Douglas to Use Titanium on DC-7

Approximately 88% of the skin on the Douglas DC-7 engine nacelles will be made of titanium sheet stock, according to Edward F. Burton, chief engineer of Douglas Aircraft Company's Santa Monica Division. This will be the first time this so called "wonder metal" has been used in commercial aircraft construction.

The DC-7, the Wright Turbo-Compound powered transport now on order by American Airlines, National, Delta, and United, will substitute titanium for aluminum alloys and stainless steel in parts of the aft nacelles, some frames, and the landing gear doors, as well as in firewall webs.

Titanium in the DC-7 will save about 200 pounds structural weight per aircraft, Burton said, about the weight of one passenger and baggage. For instance, the 11,800 square inches of the outboard nacelles in 0.025 gauge titanium will weigh 64 pounds, as contrasted with 68 pounds for only 8,000 square inches in the DC-6B nacelle.

The 11,300 square inches of titanium in the inboard nacelles weigh 64 pounds, while only 7,600 square inches of material in the DC-6B weigh the same amount. In the firewall alone, a gauge-for-gauge substitution of titanium for steel will result in a 64 pound saving for 11,500 square inches.

New Fire System CAR

Bureau of Safety Regulations is considering amendments to Parts 41, 42, and 61 of the CAR so that all airplanes operating in passenger-carrying service with engines rated at more than 600 hp each, would be required to be equipped with a fire extinguishing system which would provide at least two adequate discharges, considering the design of the system, quantity of extinguishing agent, and its rate of discharge. Comments on Draft Release No. 52-15 will be received up until June 27.

Link Time for AA Crews

About 25 American Airlines crews stationed in Tulsa are to receive Link training at Spartan. Included will be all phases of instrument flight, as high and low frequency radio procedure, radio navigation, ground control approaches, precision radar, and surveillance radar.

United Adopts Tail Warning Lights

United Air Lines is now fitting out its entire fleet of aircraft with the rotating red light, installed on the vertical stabilizers, with which it started experimenting in 1948. The present model is the same one demonstrated for members of the Flight Safety Foundation in 1950.

Developed as another safeguard in air navigation, to provide increased visibility and minimize the possibility of in-flight collision, the UAL light is a 100-watt sealed beam unit of about 18,000 candlepower. It is mounted under a red plastic dome on top of the stabilizer. Two reflectors, suspended over the lamp and revolved by a motor at 60 rpm, throw fanwise beams 180 degrees apart in the horizontal plane. One beam is 30 degrees below the horizontal plane, the other 30 degrees above. Both overlap 5 degrees at the horizontal.

Viewed at a distance, above or below, the light flashes every second. When seen from the same altitude it flashes twice each second. The installation weighs just over three pounds.

CAA DIRECTIVE

Not later than August 1, 1952, all Curtis C-46 operators will be required to provide circuit protection for the leads in both ammeters in the electric power system where the ammeter shunt is located in the positive generator lead. CAA Airworthiness Directive 52-10 requires that a circuit breaker or fuse be installed in each ammeter lead as close as practicable to the shunt.

SPECIALIZED

POWER

FOR AMERICA'S ARMED FORCES

IN VOLUME PRODUCTION THE V-32 D-2

Designing, developing and producing powerplants to meet specific requirements of the Armed Forces is a specialty of the Fairchild Engine Division. Designer of the J-44, a unique monocoque turbo-jet, and a major producer of jet engine components, the Fairchild Engine Division now has in quantity production an auxiliary powerplant—the V-32 D-2.

Placed in production on short notice to meet an urgent requirement, the V-32 D-2 auxiliary powerplants coming off the assembly line today are providing electrical power for virtually every large military aircraft. They are another example of how Fairchild's Engine Division produces specialized powerplants to fill our National Defense needs.

ENGINE AND AIRPLANE CORPORATION

FAIRCHILD

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Bay Shore, L. I., N. Y.

Guided Missiles Division,
Wyandanch, L. I., N. Y.

More and more POWER developments for America's Armed Forces

Flying Tigers to Get Slick's Navy Contract

The Flying Tiger Line's low bid of a C-46 plane-mile rate of 73.9 cents for a transcontinental contract with the U.S. Navy Department has been tentatively accepted by the Navy. Contract is one held by Slick Airways for the past two years and calls for six C-46 aircraft to be operated on a daily schedule pattern basis.

Award of the contract to the Tigers, however, is dependent on the establishment of the reduced rate, a cut from 77 cents a mile, with the Civil Aeronautics Board by June 15. Company filed its tariffs naming the 73.9 cent rate on statutory notice to take effect June 28 and simultaneously petitioned the Board for authority to advance the effective date to June 15. Meanwhile, Navy will not complete the contract until the new tariff is in effect, and further requires that a minimum of two weeks be allowed for termination of its present contract with Slick and the opening of Tiger stations on the Navy route so as to make FTL's contract operational.

Lightest Amplifier-Bridge yet developed for electronic fuel gages is this new 1.12 lb. unit for the Simmonds Pacitron gages.

The miniaturized Pacitron climaxes more than 10 years of Simmonds development of capacitance type fuel gages. Today more than forty advanced types of U.S. transport and military aircraft are flying equipped with Simmonds gages.

For full information, write to:

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Airline Commentary

By Eric Bramley

GUS KANE is a nice guy who was working as a traffic representative for Northwest Airlines in Washington. Family man, too. Five kids and a sixth expected soon. Buying a new home. Well liked by all the airline men who knew him when he worked for United and later for NWA.

Gus had been having terrific headaches for some time. They got worse, and several weeks ago he went blind. There have been tests and operations, but the doctors don't know what's wrong or what the future will hold. And he no longer has any income from NWA.

It's amazing how airline folks help out their fellow workers. We've seen it happen before, but never to this degree. No sooner had the word gotten around about Gus than the traffic reps and others who knew him went to work. Gus Kane Night was organized, and was being held as this issue went to press. It was to consist of a beer party (with the beer and the hall donated), at two bucks a head. It's been a long time since we've seen such a ticket-selling campaign. The party will probably take in over $1,000.

Beyond the party, the airline guys will continue to help as best they can. The extent to which they will go to lend a helping hand is a great tribute to them.

•

Embarrassing moments: One of Bonanza Air Lines' executives was seated next to a passenger who got airsick. Ever helpful, the exec handed the passenger a burp cup. It was the correct procedure—only thing wrong was that the burp cup didn't have a bottom in it!

•

Delta Air Lines, which has always been one of the industry's leaders in its personnel relations, has issued one of the finest and most complete manuals for its employes that we have ever seen. The 68-page manual, entitled "You and Delta," goes to each employe and has his name printed on the cover. It contains chapters on Delta's history, cities and codes, a map, organization chart, description of all departments, plus a section on CAB, CAA, etc.

The foreword by **C. E. Woolman,** president, is interesting: "Your future with Delta depends on one element that is not described in this manual . . . That element is the 'difference' in airlines.

"Perhaps it can best be illustrated by the story of a restaurant where you may have dined. It was small, charming, and friendly, at first. The food was wonderful, the service excellent. The chef beamed and turned out masterpieces, and customers stood in line to get in. Then the owner leased more space, knocked out partitions and tripled the tables. The chef was swamped, service went to pieces and the congenial atmosphere turned cold. The 'difference' was gone and the customers were soon gone, too.

"We have a similar problem . . . Now, Delta is growing and growing fast. Yet we will never have any monopoly. We will always compete with planes of similar speed and comfort and identical fares. If we continue to grow, it will be because we can expand without losing the 'difference' that made Delta's reputation."

•

Sales idea: French Communists have been plastering signs on walls in Paris saying: "U. S. Go Home." Airline men got the idea of adding "by PAA" and "by TWA" to the signs. We understand that PAA got there first, and that the TWA boys were kicking themselves for not getting the jump. However, they're both represented on the signs now.

•

One of the smartest sales promotion ideas now being used was concocted by **Jerry Keller,** Chicago and Southern's promotion manager. It's a sign for posting on the wall, and looks like anything but sales promotion until you read the last line.

The sign has a red heading: "Vacation Fever, Very Contagious." In smaller print: "Persons herein are exhibiting symptoms of lassitude mixed with prolonged periods of daydreaming of sunny breeze-swept beaches in Jamaica—romantic carefree nights in Havana, Cuba—complete freedom from work and worry." Then another red heading: "Warning." followed by: "Persons so afflicted should be given immediate treatment. Recommended: a C&S . . . cruise to the Caribbean."

There's a Better Way to make sure of Fresh Merchandise

Don't overload on goods—get reorders over-night by Airfreight

Now you can carry a wider assortment of fresh merchandise without tying up any more capital.

How? *By cutting down on the depth of your stock—and relying on airfreight to provide an overnight replenishment cycle.*

In this way, you can exploit runners to the fullest—ring up more sales—speed up your stock turn—and keep unpopular styles or models from piling up in inventory.

The addition of gross margin and net profit that airfreight makes possible, more than offsets the slightly higher cost of air shipping. Decide now to take advantage of this new merchandising method. Wire us collect and we'll have an American Airlines' representative in your office promptly. He will tell you about other advantages that are yours with airfreight—like decreasing markdowns. American Airlines, Inc., Cargo Sales Division, 100 Park Avenue, New York 17, New York.

Check American First

For Every Airfreight Problem—Here's Why

CARGO CAPACITY
American has the greatest available ton-mile capacity of any airline

HANDLING FACILITIES
American's airfreight facilities are backed by the largest personnel force of any airline

EXPERIENCE
American has been operating airfreight service longer than any other airline

COVERAGE
American directly serves more of America's leading business centers than any other airline

KNOW-HOW
American has handled more freight than any other airline

AMERICA'S LEADING AIRLINE

AMERICAN AIRLINES INC.

ALL-CARGO AIRLINE OPERATIONS FOR OCTOBER-DECEMBER AND CALENDAR, 1951

Airlines	Freight Ton-Miles	Available Ton-Miles Flown	% Available Ton-Miles Used	Revenue Plane-Miles	Scheduled Miles	% Scheduled Miles Completed	Total Operating Revenues	Freight Revenues	Non-Scheduled Transport Rev.	Total Operating Expenses	Aircraft Operating Expenses	Ground & Indirect Expenses	Net Operating Income
October, 1951													
Airnews*	10,652	39,242	27.14	11,212	11,212	100.00	Figures are not available.						
Fly. Tiger	2,434,915	2,908,127	83.73	447,404	607,846	72.33	$ 599,506	$ 378,539	$ 8,796	$ 304,795	$ 197,545	$ 107,250	$ 294,711
Riddle	846,378	1,044,454	81.07	180,514	142,908	100.00	116,689	116,016	. . . .	105,046	70,859	34,187	11,643
Slick	6,844,201	7,976,521	83.30	1,163,290	869,108	87.86	973,063	687,997	235,897	898,567	541,431	357,136	74,495
US Airlines	148,404	327,760	45.28	60,682	62,241	98.80	64,768	20,106	. . . .	103,820	73,575	30,245	-39,051
TOTALS	10,084,550	12,296,104	82.01	1,863,102	1,693,315	83.71	1,754,026	1,202,658	244,693	1,412,228	883,410	528,818	341,798
November, 1951													
Fly. Tiger	2,933,618	3,352,044	87.52	515,699	562,504	87.97	$ 618,993	$ 443,061	$ 14,770	$ 384,463	$ 255,608	$ 128,855	$ 234,530
Riddle	923,579	1,183,688	78.03	206,551	140,820	100.00	149,479	147,146	. . . .	122,833	85,450	37,383	26,646
Slick	6,341,141	7,494,999	84.60	1,088,896	842,566	82.92	833,012	672,100	210,160	767,658	426,849	340,809	65,353
US Airlines	Figures are not yet available.						65,835	39,629	782	102,181	72,717	29,464	-36,346
TOTALS	10,198,338	12,030,731	84.77	1,811,146	1,545,890	86.31	1,667,319	1,301,936	225,712	1,377,135	840,624	536,511	290,183
December, 1951													
Fly. Tiger	2,962,530	3,581,289	82.72	543,079	511,254	97.35	Under CAB regulations the airlines are not required to file a report of revenues and expenses for the month of December, but instead file a statement for the quarter ending December.						
Riddle	946,975	1,229,134	77.04	216,479	145,514	100.00							
Slick	6,395,254	7,161,335	89.30	1,048,957	845,314	68.45							
US Airlines	Figures are not yet available.												
TOTALS	10,304,759	11,971,758	86.07	1,808,515	1,502,082	81.34							
Quarter Ending December 31, 1951 /													
Airnews*	10,652	39,242	27.14	11,212	11,212	100.00	Figures are not available.						
Fly. Tiger	8,331,063	9,841,460	84.65	1,506,182	1,681,604	85.17	$1,804,750	$1,260,478	$ 32,151	$1,086,925	$ 716,931	$ 369,994	$ 717,825
Riddle	2,716,932	3,457,276	78.58	603,544	429,242	100.00	406,971	394,411	. . . .	359,857	248,017	111,839	47,114
Slick	19,380,596	22,632,855	85.63	3,301,143	2,556,988	79.76	2,739,980	2,005,488	698,737	2,757,932	1,526,280	1,231,652	-17,952
US Airlines	148,404	327,760	45.28	60,682	62,241	98.80	228,435	115,143	98,515	342,282	237,200	105,083	-113,848
TOTALS	30,587,647	36,298,593	84.27	5,482,763	4,741,287	83.81	5,180,136	3,775,520	829,403	4,546,996	2,728,428	1,818,568	633,139
Calendar, 1951													
Airnews*	301,167	919,667	32.75	263,211	265,750	98.85	$ 169,720	$ 148,686	$ 276	$ 144,212	$ 121,324	$ 22,887	$ 25,508
Fly. Tiger	29,173,038	36,168,899	80.66	5,544,388	5,935,281	72.71	6,455,955	4,356,766	193,701	3,892,577	2,558,365	1,334,212	2,563,378
Riddle**	6,251,461	8,459,601	73.90	1,524,598	1,277,601	100.00	936,538	903,767	. . . .	958,195	627,580	330,614	-21,656
Slick	67,890,612	80,664,665	84.16	12,574,966	9,363,317	83.39	9,801,809	6,590,261	2,668,386	9,345,589	5,233,386	4,112,204	456,219
US Airlines***	. . . .	. . . .	. . .	. . . .	. . . .	. . .	596,455	378,593	200,592	982,467	639,116	343,351	-386,012
TOTALS	103,616,278	126,212,832	82.09	19,907,163	16,841,949	81.13	17,960,477	12,378,073	3,062,955	15,323,040	9,179,771	6,143,268	2,637,437

* Traffic figures for Airnews are through October 12, 1951 only, since company terminated operations at that time per CAB order. Financial figures, however, are through September 30, 1951. Later figures for October are not available.
** Riddle began operations March 25, 1951.
*** 1951 traffic figures for US Airlines are incomplete.

U. S. ALL-CARGO AIRLINE BALANCE SHEET DATA AS OF DECEMBER 31, 1951

Airlines	Total Assets	Current Assets	Investments & Special Funds	Operating Prop. & Equipment	Deferred Charges	Current Liabilities	Long-Term Debt	Deferred Credits	Operating Reserves	Capital Stock	Surplus
Airnews*	$	$	$	$	$	$	$	$	$	$	$ . . . .
Flying Tiger	9,500,030	4,934,767	373,831	4,191,432	. . . .	4,669,416	378,597	30,000	328,204	1,779,357	2,314,456
Riddle	294,230	228,525	. . . .	21,426	44,279	189,082	23,253	. . . .	37,259	213,500	-168,864
Slick	7,742,066	3,601,283	252,355	3,749,858	138,571	2,686,729	3,030,646	196,274	3,330	2,802,520	-977,433
U.S. Airlines	392,391	193,743	30,000	139,662	28,986	297,218	442,500	. . . .	60,526	155,000	-562,853
TOTALS	17,928,717	8,958,318	656,186	8,102,378	211,836	7,842,445	3,874,996	226,274	429,319	4,950,377	605,306

* Company terminated operations October 12, 1951 per CAB order.

U. S. INTERNATIONAL AIRLINE REVENUE AND EXPENSES FOR FEBRUARY, 1952

Airlines	Total Operating Revenues	Passenger Revenues	U. S. Mail Revenues	Foreign Mail Revenues	Express Revenues	Freight Revenues	Excess Baggage Revenues	Non-Scheduled Transport Rev.	Total Operating Expenses	Aircraft Operating Expenses	Ground & Indirect Expenses	Net Operating Income
American	$ 460,609	$ 392,070	$ 9,962	$ 10,007	$ 165	$ 30,328	$ 6,285	$	$ 417,554	$ 207,970	$ 209,584	$ 43,055
Braniff	661,183	444,218	165,035	12,187	. . . .	26,139	10,594	. . . .	789,664	364,514	425,150	-128,481
C & S	408,832	218,220	154,439	1,263	. . . .	20,074	8,690	. . . .	295,087	147,490	147,597	113,745
Colonial	82,525	73,845	4,710	1,155	. . . .	682	254	. . . .	106,536	43,044	63,492	-24,011
Eastern	481,896	432,699	25,279	. . . .	. . . .	15,530	7,993	. . . .	386,090	255,925	130,165	95,806
National	166,330	156,424	721	. . . .	692	2,975	1,598	3,920	190,841	62,090	128,751	-24,511
Northwest	1,097,623	540,018	316,706	42,066	2,520	178,104	5,853	. . . .	1,370,799	554,213	816,586	-273,176
Panagra*	1,338,384	1,115,257	51,900	42,501	78,370	. . . .	30,635	965	1,173,202	540,534	632,668	165,182
PAA												
Latin Amer.	5,619,172	3,995,916	602,250	155,067	. . . .	645,057	111,408	57,783	5,988,755	2,638,148	3,350,607	-369,583
Atlantic	4,415,757	2,351,802	1,142,910	202,116	. . . .	363,780	85,565	247,031	4,901,430	2,405,695	2,495,735	-485,673
Pacific	2,771,165	1,498,184	894,102	96,840	. . . .	223,316	25,131	. . . .	2,718,403	1,680,595	1,037,808	52,762
Alaska	356,991	179,351	91,060	. . . .	. . . .	85,165	1,451	. . . .	465,301	196,305	268,996	-108,310
TWA	3,163,579	1,804,816	692,101	255,556	. . . .	274,097	47,630	56,451	3,390,449	1,612,066	1,778,383	-226,870
United	590,100	516,358	49,218	. . . .	. . . .	18,034	3,277	. . . .	735,725	425,660	310,065	-145,625
TOTALS	21,614,146	13,719,178	4,200,393	818,758	81,747	1,883,281	346,364	366,150	22,929,836	11,134,249	11,795,587	-1,315,690

* U.S. Mail pay accrued on basis of temporary mail pay rate order of October 17, 1951.

SUMMARY OF U. S. INTERNATIONAL AIRLINE TRAFFIC FOR FEBRUARY, 1952

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	U. S. MAIL TON-MILES**	FOREIGN MAIL TON-MILES	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
				%										
American	9,639	7,953,000	11,236,000	70.78	13,398	5,328	335	148,655	1,036,560	1,549,219	66.91	222,339	225,032	95.97
Braniff	3,017	5,879,000	14,528,000	40.47	24,547	5,696	. . . .	71,288	758,669	2,090,434	36.29	342,321	342,503	99.95
C & S	2,718	3,015,000	6,215,000	48.51	4,580	718	. . . .	77,254	398,215	860,751	46.26	134,314	134,618	99.77
Colonial	1,816	1,436,000	2,340,000	61.37	1,659	543	. . . .	3,940	161,138	279,900	57.57	45,976	46,769	97.84
Eastern	6,738	9,324,000	14,406,000	64.72	33,706	. . . .	. . . .	70,955	1,095,859	2,534,158	43.24	243,435	247,306	98.43
National	9,740	2,525,000	4,011,000	62.95	1,360	. . . .	3,318	13,512	273,084	498,627	60.68	69,390	74,414	92.70
Northwest	4,824	7,886,000	15,930,000	49.50	126,676	25,464	9,978	508,505	1,511,876	2,480,955	60.94	462,798	500,321	91.28
Panagra	11,269*	12,097,000	17,462,000	69.20	33,577	22,367	170,975	208	1,564,429	2,422,638	64.58	482,437	469,274	100.00
PAA														
Latin Amer.	76,580	60,376,000	99,853,000	60.46	262,189	55,189	. . . .	2,541,175	9,057,769	13,705,383	66.09	2,392,519	1,920,793	99.91
Atlantic	21,962	30,276,000	53,717,000	56.36	480,053	108,358	. . . .	1,268,733	5,163,838	7,932,238	65.10	1,140,992	1,094,187	98.83
Pacific	6,321	22,745,000	38,349,000	59.31	348,714	60,975	. . . .	536,252	3,454,470	5,804,507	59.51	790,175	767,496	99.70
Alaska	2,587	2,879,000	9,390,000	30.66	39,487	. . . .	. . . .	356,457	699,873	1,344,956	52.04	209,155	197,966	99.99
TWA	9,258	22,100,000	39,846,000	55.46	379,630	134,144	. . . .	591,641	3,549,364	5,200,032	68.26	973,862	1,010,827	93.66
United	3,708	9,186,000	12,884,000	71.30	64,273	. . . .	. . . .	45,452	1,078,801	1,894,572	56.94	245,500	245,500	100.00
TOTALS	170,177	197,677,000	340,187,000	58.11	1,813,849	418,782	184,606	6,134,027	29,803,945	48,598,350	61.33	7,755,213	7,297,006	98.01

* Figure is preliminary.
** Includes air parcel post.

SUMMARY OF U. S. LOCAL SERVICE AIRLINE REVENUES AND EXPENSES, SEPTEMBER, 1952

AIRLINES	TOTAL OPERATING REVENUES	PASSENGER REVENUES	MAIL REVENUES	EXPRESS REVENUES	FREIGHT REVENUES	EXCESS BAGGAGE REVENUES	NON-SCHEDULED TRANSPORT REV.	TOTAL OPERATING EXPENSES	AIRCRAFT OPERATING EXPENSES	GROUND & INDIRECT EXPENSES	NET OPERATING INCOME
All American	$ 236,436	$ 79,888	$ 143,109	$ 5,765	$ . . .	$ 381	$ 6,089	$ 314,246	$ 147,844	$ 166,402	$ -77,810
Bonanza	88,310	34,411	52,897	138	173	379	. . .	92,875	41,576	51,299	-4,565
Central	105,599	23,632	90,963	376	2,030	255	-2,459	161,228	58,499	102,729	-55,629
Empire	84,605	28,852	49,549	739	. . .	149	4,778	87,837	46,141	41,696	-3,233
Frontier	290,806	103,023	169,816	1,549	7,384	697	3,383	341,264	163,875	177,389	-50,458
Lake Central	57,835	16,388	40,183	1,896	. . .	397	1,539	121,748	65,114	56,634	-63,913
MCA*	56,682	34,465	19,384	1,031	724	149	795	77,854	31,790	46,064	-21,172
Mid-West	27,564	897	26,643	. . .	. . .	3	. . .	32,196	11,165	21,031	-4,632
Ozark	187,627	35,280	150,635	1,541	. . .	164	. . .	221,304	113,931	107,373	-33,677
Piedmont	281,320	179,314	93,039	2,000	2,967	1,314	2,123	315,576	159,099	156,477	-34,256
Pioneer	291,496	185,629	90,819	1,469	5,529	1,692	1,927	291,061	127,131	163,930	435
Robinson	133,142	47,069	60,831	1,366	1,647	111	3,392	172,329	97,258	75,071	-39,187
Southern	204,226	82,940	117,445	2,977	. . .	467	. . .	247,851	129,087	118,764	-43,625
Southwest	178,045	91,474	71,234	1,710	5,819	368	282	202,728	89,143	113,585	-24,683
Trans-Texas	213,637	62,623	135,573	1,063	2,339	463	11,088	215,698	100,061	115,637	-2,061
West Coast	104,494	43,144	57,259	427	1,686	121	1,648	103,058	46,199	56,859	1,436
Wiggins	25,671	909	24,299	80	. . .	. . .	339	23,332	8,779	14,553	2,339
Wis. Central	163,977	66,419	92,916	4,197	. . .	350	. . .	191,366	90,455	100,911	-27,389
TOTALS	2,731,472	1,116,357	1,486,594	28,324	30,298	7,460	34,924	3,213,551	1,527,147	1,686,404	-482,080
Helicopter Mail Service											
HAS	39,361	. . . .	39,361	. . .	. . .	. . .	. . .	34,523	20,072	14,451	4,837
Los Angeles	26,435	. . . .	25,935	. . .	. . .	. . .	. . .	29,654	16,785	12,869	-3,219

* Figures cover local service segment awarded MCA by CAB in the Parks Air Lines Investigation Case.

SUMMARY OF U. S. LOCAL SERVICE AIRLINE TRAFFIC FOR MARCH, 1952

AIRLINES	REVENUE PASSENGERS	REVENUE PASSENGER MILES	AVAILABLE SEAT MILES	PASSENGER LOAD FACTOR	MAIL TON MILES	EXPRESS TON-MILES	FREIGHT TON-MILES	TOTAL TON-MILES REV. TRAFFIC	AVAILABLE TON-MILES FLOWN	% AVAILABLE TON-MILES USED	REVENUE PLANE-MILES	SCHEDULED MILES	% SCHEDULED MILES COMPLETED
				%									
All. Amer.	10,991	1,572,000	5,327,000	29.50	4,624	8,398	. . .	166,863	608,770	27.41	253,654	289,139	85.16
Bonanza	2,577	689,000	1,712,000	40.30	486	285	1,484	68,642	193,997	35.38	76,032	78,861	93.56
Central	1,355	520,000	2,574,000	20.20	2,465	845	1,586	55,002	294,178	18.70	122,574	123,456	96.77
Empire	4,030	784,000	2,210,000	35.48	2,395	1,297	. . .	78,540	240,450	32.66	105,207	105,834	99.15
Frontier	8,942	2,412,000	7,944,000	30.36	8,084	5,446	37,329	293,113	634,670	46.18	380,411	383,098	98.01
Lake Cent.	2,255	380,000	2,006,000	18.94	1,191	4,215	298	41,499	232,993	17.81	101,845	110,112	89.85
MCA*	2,842	550,000	1,532,000	35.90	1,202	1,726	3,308	58,728	158,110	37.14	65,879	78,926	83.40
Mid-West	147	21,000	214,000	9.81	619	. . .	. . .	2,346	23,594	9.94	53,624	76,322	70.24
Ozark	4,601	741,000	5,523,000	13.42	2,992	5,285	. . .	77,527	544,523	14.24	220,902	244,362	88.63
Piedmont	15,279	3,515,000	8,331,000	42.19	5,923	5,123	8,348	355,976	952,154	37.39	396,731	399,255	97.89
Pioneer	14,447	3,678,000	8,264,000	44.51	10,769	3,302	15,867	399,411	826,416	48.33	344,340	346,909	99.03
Robinson	6,168	1,014,000	2,379,000	42.62	2,224	3,491	1,867	101,835	244,964	41.57	114,739	121,377	87.51
Southern	9,617	1,649,000	5,813,000	28.37	7,104	7,291	. . .	172,373	525,090	36.93	276,800	279,778	98.94
Southwest	12,554	2,283,000	4,164,000	54.83	6,409	3,942	14,056	253,510	475,846	53.28	198,269	203,989	95.41
Trans-Texas	5,109	1,428,000	4,891,000	29.20	4,989	2,283	7,234	157,742	558,905	28.22	232,877	226,734	99.10
West Coast	7,046	1,042,000	2,448,000	42.57	787	986	5,162	102,254	217,917	46.92	116,664	122,326	95.09
Wiggins	145	15,000	125,000	12.00	69	119	. . .	1,486	13,370	11.11	31,349	47,047	66.63
Wis. Central	8,531	1,263,000	3,278,000	38.52	6,161	8,659	. . .	134,371	374,601	35.87	156,084	175,584	88.89
TOTALS	119,636	23,556,000	68,735,000	34.27	68,493	62,693	96,539	2,521,218	7,120,548	35.41	3,247,981	3,413,112	93.62
Helicopter Mail Service													
HAS	. . .	. . . .	. . . .	. . .	2,233	. . .	. . .	2,233	5,236	42.65	27,228	29,226	93.16
Los Angeles	. . .	. . . .	. . . .	. . .	3,879	. . .	. . .	3,879	8,235	47.10	21,729	22,450	96.79

* Figures cover local service segment (route 106) awarded MCA by CAB in the Parks Air Lines investigation Case.

New CAB Concept of Interlocking

RULING for the first time on a highly technical legal point, Civil Aeronautics Board has found that interlocking relationships requiring Board approval exist when partners of an investment banking firm serve as directors of aeronautical enterprises even though one partner may serve for no more than one such enterprise.

Reasoning advanced by the Board is that a partner serving as a director for an airline, for example, is technically the representative of another partner of the same firm who may be a director of an aircraft manufacturing concern. Although the activities and interests of two such partners may be completely divorced, Federal sanction is necessary, CAB said, because one is actually in a position to influence the other.

Applying this principle to situations involving Lehman Brothers, New York investment banking firm, which the Board has been investigating for some time, CAB took the following actions:

1. Disapproved and Ordered Terminated Within 60 Days Interlocking Relationships Between:

- **Pan American,** on one hand, and National, American Export Lines and Consolidated Vultee Aircraft Corp., arising from Robert Lehman's holding a directorship in Pan Am and having representatives as directors of the other firms named;
- **National,** on one hand, and Pan American and Convair, arising from Joseph A. Thomas' holding a directorship in National and having representatives as directors of the other firms named;
- **Continental** and Convair arising from Frederick L. Ehrman's holding a directorship in Continental and having a representative serving as a director in Convair.

2. Approved Interlocking Relationships Between:

- **Pan American,** on one hand, and Continental, Western Union Telegraph, Commercial Pacific Cable Co., Chicago Motor Coach Co., and New York City Omnibus Corp., where Robert Lehman, a Pan Am director, has a representative serving as a director in each of the other firms;
- **National,** on one hand, and Continental, United Fruit, Western Union, Commercial Pacific, Chicago Motor Coach and New York Omnibus, where Joseph A. Thomas, a National director, has a representative serving as a director in each of the other firms;
- **Continental,** on one hand, and Pan Am, National, United Fruit, American Export, Western Union, Commercial Pacific, Chicago Motor Coach and New York Omnibus, where Frederick L. Ehrman, a Continental director, has representatives serving as director in the other firms.

Delta—C&S Merger Hearing in August

ATTORNEYS for Delta Air Lines and Chicago and Southern Air Lines made a strong bid for expeditious handling of their merger proposal at a prehearing conference before CAB Examiner William F. Cusick last week. Their request resulted in setting of August 11 as date for opening of hearings, just 3½ months after the agreement was filed with CAB.

If the case assumes the tempo of the Braniff/Mid-Continent Merger Case at that point, a decision can be expected in October. But numerous pleas that several segments of the merging parties routes, including C&S' entire Caribbean route, do not integrate with the proposal merged system, may slow down the proceeding. These included:

- **National Airlines'** motion for expansion of the case to condition approval on the sale or transfer of C&S' Caribbean route to National.
- **Capital Airlines'** petition to condition the merger on non-transfer of certain segments to the merged system, such as C&S Houston-Memphis route and Delta's Atlanta-New Orleans-Dallas segment.
- **Eastern Airlines'** statement, made by attorney Harold A. Russell, that request would be made for expansion to include possible transfer to Eastern "or other appropriate carriers" of C&S' segments between Kansas City-Memphis, Houston-Memphis, Memphis-Detroit and Evansville-Chicago, and Delta's segments between Atlanta-New Orleans and New Orleans-Dallas.

Former CAB chairman, L. Welch Pogue, representing Delta, and Washington attorney William A. Roberts, for C&S, stated "we will very vigorously oppose motions to expand the proceeding." They urged CAB to move the case as expeditiously as it did the Braniff-MCA proceeding. Pogue and Roberts said stockholders' approval would be sought after the CAB case has been completed.

CAB Decisions

- **Capital-Northwest** merger proposal dismissed "without prejudice to re-submission at a later date," upon request of Northwest whose stockholders voided the merger agreement.
- **KLM Royal Dutch Airlines'** Caribbean route permit extended three years by CAB with approval of President Truman.
- **Mackey Air Transport** granted three year temporary certificate for passenger and property service between West Palm Beach-Ft. Lauderdale and Nassau.
- **Pan American World Airways'** temporary trans-Atlantic mail rates proposed to be cut by approximately $1,451,000 retroactive to April 1, with annual pay under proposal estimated at $12,270,000.

EXAMINERS' REPORTS

Denial of applications of Western Air Lines and United Air Lines for direct one-carrier service between Los Angeles and Twin Cities has been recommended by Examiner William J. Madden who favors a Western-United interchange service via Denver, subject to voluntary arrangements by the carriers.

Examiner Edward T. Stodola recommended denial of application of Melbourne, Florida, for certificated airline service.

(Note: Under CAB's new rules of practice, examiners reports are designated as "initial decisions" to take effect automatically in ten days, unless exceptions are filed by one or more of the parties or unless CAB on its own initiative decides to review the examiners findings.)

CAB CALENDAR

June 24—Hearing resumed in Southern Airways Certificate Renewal Case. Washington, D. C. (Docket 5199).

July 7—Hearing in Pioneer Air Lines Mail Rate Case. Washington, D. C. (Docket 5499)

July 8—Hearing in Aerovias Brasil, S. A. Foreign Permit Amendment Case. Washington, D. C. (Dockets 5540-41).

July 21—Hearing in Pacific-Northwest-Alaska Tariff Investigation. Tentative. (Docket 5067 et al.)

July 22—Hearing in Trans-Texas Segments 2 & 6 Renewal/Braniff, Eastern Suspension Case. Washington. (Docket 5233 et al.)

Aug. 4—Hearing in Portland-Seattle Service Case. Washington, D. C. (Docket 2901 et al.)

Aug. 11—Hearing in Delta-Chicago and Southern Merger Case. Washington, D. C. (Docket 5546).

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People

ADMINISTRATIVE

H. Max Healy elected vice president in charge of commercial operations for Avianca, Columbian National Airline. New post covers responsibility for relations with IATA and ICAO, as well as with CAB and government agencies of other countries. Formerly with Pan American World Airways, Healy joined Avianca in 1947 as assistant to the president.

Healy

Robert L. Hamill, a partner in the New York engineering firm of Sanderson & Porter, has been elected a director of Pan American World Airways.

John A. Cunningham, vice president-operations for Mid-Continent Airlines, is the newly elected president of the Operations Conference of the Air Transport Association. A veteran of 23 years in the aviation industry, Cunningham was elected a vice president in 1943.

Douglas Campbell, vice president and general manager of Pan American-Grace Airways, has been elected chairman of Traffic Conference No. 1 (Western Hemisphere) of the International Air Transport Association.

Douglas S. Reed elected to the board of directors of California Eastern Airways. He is a partner in Davies & Co., San Francisco investment house.

L. Preston Blatter, former CAB air transport examiner for mail rates, has joined Frontier Airlines as comptroller.

OPERATIONS-MAINTENANCE

A. H. Milward has been appointed by British European Airways to the newly-created post of controller of operations, responsible directly to the chief executive for the control and coordination of all aspects of operation of BEA's air services. Milward joined the airline in 1946 as general manager of Continental services and was promoted last November to director of aircraft movements.

Hewett

Trans-Canada Air Lines has appointed **C. S. Hewett** as Atlantic region operations manager succeeding **F. M. McGregor,** resigned.

C. M. Christenson named by United Air Lines to head a new department of safety. Christenson, a former UAL pilot, will report directly to Otis E. Kline, executive vice president.

Barry W. Daines, Northwest Airlines' station manager at Washington, D. C., transferred to Tokyo as station superintendent.

William R. Sirmans has been assigned by Pan American World Airways to Forte-de-France, Marinique, as station manager, replacing **Charles E. Coutre,** who has returned to Miami for re-assignment to another station . . . **James F. Carroll,** station manager at the company's recently deactivated St. Lucia base in the British West Indies, assigned to San Salvador, El Salvador, as assistant station manager and technical maintenance supervisor.

Byron "Barry" Anshanslin, formerly senior fleet service clerk in New York for American Airlines, transferred to Chicago as chief of the fleet service clerks.

TRAFFIC & SALES

Walter J. Rauscher, formerly Newark sales manager for American Airlines, appointed eastern regional cargo sales manager. **Robert S. Smith** replaced Rauscher in the Newark post. In a chain reaction, **Lawrence Wafrock** switched to Smith's post of New York cargo sales manager from passenger sales manager. **James J. Mansfield,** manager of group sales, has been appointed manager of passenger sales. **John S. Shriner,** chief of office services in New York, becomes manager of group sales and **William A. Merchant** named chief of office services.

Henry J. Katzenberger has become district sales manager for Braniff Airways in Michigan and Ohio with headquarters in Detroit.

Katzenberger

Don Kambe, formerly manager of industrial sales in Los Angeles, is now city sales manager for TWA in Beverly Hills, Calif.

Richard T. Dominiak named director of sales for Central Airlines replacing **W. Robert England,** who resigned and has retired from the airline industry. **Emett "Zeke" Evans** has been named director of interline development for the local service airline.

Harry L. White appointed Western Air Lines' sales manager in St. Paul. White moves to St. Paul from Mankato, Minn., where he was the company's station manager.

George Humphrey promoted by American Airlines from assistant city ticket office manager to manager, Phoenix, Ariz.

Howard R. West, district sales manager for Northwest Airlines in Cleveland, transferred in the same capacity to Los Angeles. He replaces **Frank Haggerty,** who resigned to become vice president of Mackenzie Tours, Honolulu.

R. D. Kimber, job analyst for TWA in Kansas City, promoted to supervisor of industrial relations, western region, in Los Angeles. He replaces **Richard Fuller** who resigned to become assistant personnel director of The Flying Tiger Line.

Stephen L. Harbert has joined Philippine Air Lines' sales staff in San Francisco.

Great Names in aviation congregated at San Fernando Valley Airport, Van Nuys, Calif., for the airports second annual Spring Roundup in May. Seated, left to right, are Walter Brookins, Wright Brothers' first civilian pilot; Garland Lincoln, old-time stunt pilot; Gene May, veteran Douglas test pilot; Jimmy Mattern, pioneer round-the-world pilot. Standing are Pop Montee, oldest licensed pilot; Fred Kelly and Jimmy James, blazers of Los Angeles' first airmail service; Horace Heidt, master of ceremonies; Art Goebels, winner of first cross-Pacific race from Oakland to Honolulu; Tony Levier, Lockheed's chief engineering test pilot; and Max Conrad, well-known private pilot.

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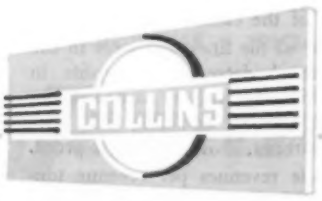

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Comparative Financial and Operating Data—Domestic Industry

First Quarter 1952—First Quarter 1951

(000's Omitted)

	REVENUES				EXPENSES						OPERATING INCOME							
	Total		Per Revenue Ton-Mile		Total		Per Revenue Ton-Mile		Per Available Ton-Mile		Total		Per Revenue Ton-Mile		Revenue Ton-Miles #		Available Ton-Miles #	
	1952	1951	1952	1951	1952	1951	1952	1951	1952	1951	1952	1951	1952	1951	1952	1951	1952	1951
American	$ 37,898	$ 32,228*	50.7	51.1	$ 35,708	$ 25,403	47.8	40.3	30.5	29.3	$2,191	$ 6,825	2.9	10.8	74,744	63,120	117,083	86,824
United	28,973	23,872*	51.3	49.9	26,272	20,744	46.5	43.3	25.9	26.9	2,701	3,128	4.8	6.6	56,522	47,873	101,269	77,055
Trans World	22,452	19,872*	52.1	52.1	22,465	19,897	52.1	52.2	32.6	31.8	—13	—25	..	—1	43,086	38,118	68,816	62,592
Eastern	28,007	26,806*	53.4	52.8	24,285	19,811	46.3	39.0	24.0	21.3	3,723	6,995	7.1	13.8	52,402	50,796	101,042	93,168
Total—Four Major Carriers	$117,330	$102,778	51.8	51.4	$108,730	$ 85,855	48.0	42.9	28.0	26.9	$8,602	$16,923	3.8	8.5	226,754	199,907	388,210	319,639
Braniff	$ 4,401	$ 4,107	57.7	59.1	$ 4,202	$ 3,543	55.1	51.9	28.7	27.5	$ 199	$ 564	2.6	8.1	7,633	6,953	14,658	12,865
Capital	7,786	8,178	57.1	58.4	8,984	7,957	65.9	56.8	28.0	27.0	—1,198	221	—8.8	1.6	13,637	14,006	32,117	29,425
Chicago & Southern	3,114	2,420	62.9	62.2	3,012	2,365	60.8	60.8	32.9	35.2	102	55	2.1	1.4	4,949	3,890	9,151	6,725
Colonial	1,093	1,116**	78.7	80.3	1,276	1,182	91.9	85.1	43.3	41.3	—183	—66	—13.2	—4.8	1,388	1,389	2,948	2,863
Continental	2,342	1,751	69.6	76.5	2,246	1,541	66.8	67.3	32.3	33.5	96	210	2.8	9.2	3,364	2,888	6,963	4,594
Delta	7,525	6,454	56.7	53.9	6,154	5,013	46.4	41.9	27.2	24.6	1,371	1,441	10.3	12.0	13,271	11,982	22,631	20,399
Mid-Continent	2,237	1,993	70.8	71.7	2,335	1,892	73.9	68.1	39.3	36.4	—97	101	—3.1	3.6	3,159	2,778	5,948	5,199
National	8,315	7,842	52.0	54.6	6,207	5,150	38.8	35.9	23.3	22.0	2,108	2,692	13.2	18.7	16,001	14,350	26,683	23,411
Northeast	1,201	1,459	87.0	88.3	1,657	1,491	119.9	90.2	58.1	51.1	—455	—32	—32.9	—1.9	1,381	1,652	2,852	2,915
Northwest	7,027	5,827	59.2	62.4	8,579	7,438	72.3	79.6	37.0	39.8	—1,553	—1,611	—13.1	—17.2	11,862	9,341	23,160	18,681
Western/Inland	3,868	3,651	56.5	57.8	3,529	3,268	51.5	51.7	31.4	30.6	339	383	5.0	6.1	6,846	6,317	11,221	10,688
Total Excl. 4 Major Carriers	$ 48,909	$ 44,798	58.6	59.8	$ 48,181	$ 40,840	57.7	54.5	30.5	29.6	$ 729	$ 3,958	.8	5.3	83,491	74,946	158,332	137,765
Total Industry	$166,239	$147,576	53.6	53.7	$156,911	$126,695	50.6	46.1	28.7	27.7	$9,331	$20,881	3.0	7.6	310,245	274,853	546,542	457,404

* *Mail revenue computed by multiplying the reported mail ton-miles by 45 cents.*
** *Adjusted for retroactive mail payments.*
\# *Scheduled and Non-Scheduled.*
(—) *Deficit.*

Source: Form 41's and C.A.B. Recurrent Reports and American Aviation Daily.

Income Dips 55%; Trunks Ask Discount End

Round-trip discount elimination would yield lines $12,000,000 in additional revenue, if CAB consents.

By Eric Bramley

WITH airline cost increases still outstripping gains in revenues, the domestic trunks are continuing their push for an upward fare adjustment in addition to the $1 boost approved by CAB in April.

They want the $12 million additional revenue that would result from elimination of the round-trip discount, but so far CAB hasn't approved the proposal.

Backing up their claims that the price of their product is too low in view of the increased cost of doing business is an analysis of financial results for the first quarter of 1952 which shows that:

- **Operating income of the 15 trunks was down 55.4%** from the same 1951 period—from $20,881,000 to $9,331,000.
- **Six of the carriers showed losses.**
- **Four of the lines that were in the black suffered decreases** in profits in excess of 45% under those earned in the same 1951 quarter, and only one, Chicago & Southern, showed a larger profit.
- **While revenues per revenue ton-mile** dropped slightly, expenses climbed roughly 10%.
- **The industry,** while showing an increase in total revenues of 12.7%, had an increase in total expenses of 23.9%, resulting in the 55.4% drop in operating income.
- **Actual weight load factor** was 56.8% and the break-even was 53.6%, a margin of only 3.2 percentage points. In contrast, the safety margin in the same 1951 period was 8.5%, with actual load factor of 60.1% and break-even of 51.6%.

$1 Calculations

The $1 fare increase, which will produce about $16 million yearly, was not in effect in the first quarter. However, observers point out that if it had been in effect, and if it could be assumed (1) that the carriers would have realized 25% or $4 million of the $16 million and that (2) all of it would have been profit, the industry's operating income would have been raised only from $9,331,000 to $13,331,000 against $20,881,000 last year. Using the same assumptions, if both the $1 increase and elimination of round-trip discounts had been allowed, income would have been $16,331,000.

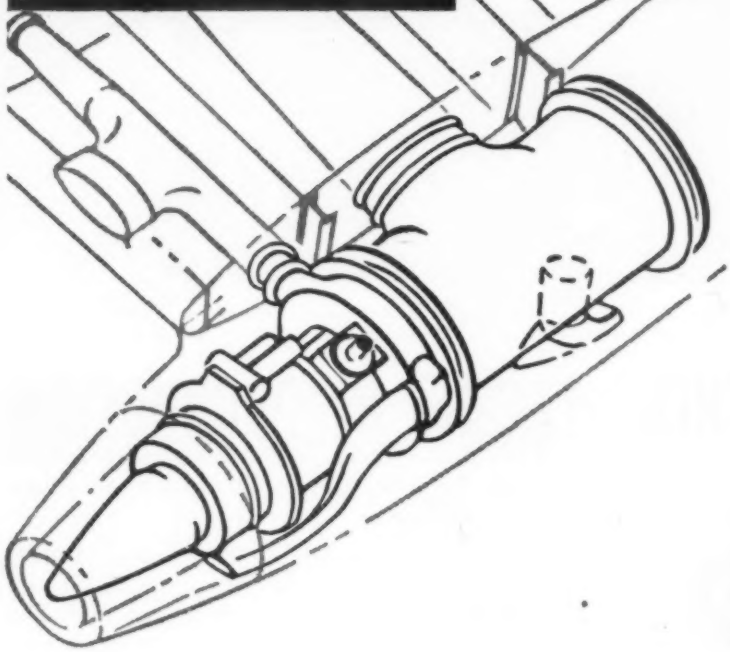
A warning that unless CAB changes its attitude on fares some airlines may have to be returned to subsidy mail rates was given earlier this month by William J. Hogan, vice president and treasurer of American Airlines, in a speech before the Cleveland Society of Security Analysts. He urged approval of elimination of round-trip discounts.

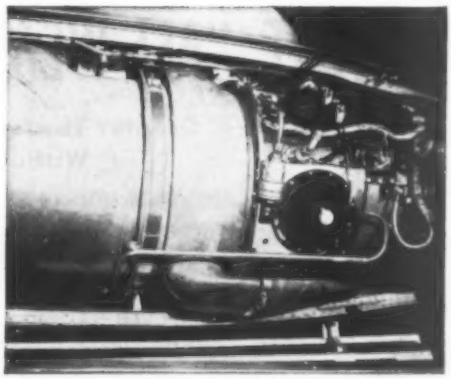
He added that the industry needs "at least five years of good solid earnings" to give investors assurance that it has reached a reasonable degree of stability. Stressing the need for a good credit standing, Hogan pointed out that the industry is committed for about $350 million of new flight equipment for delivery between now and 1954, and that another $350 million may be required with the advent of turbine engines.

As an indication that the credit standing is not good, he said that two recent offers of airline securities cannot be "considered too successful" and added that the airlines and CAB "have a real opportunity to improve credit standing . . . so that new money can be raised on reasonable terms. The credit standing of even the stronger carriers is below that which all of us recognize as desirable."

Hogan stated that AA is "giving considerably more attention to ways and means of controlling our costs with a hope of some deceleration in the rate of increasing costs. In spite of this, however, unit costs in 1952 will be higher; with a return to normal load factors, some further upward adjustment to rates and fares will be necessary."

hot tip! 600,000 b.t.u.





Here's just about the newest and hottest thing in aircraft heating: 600,000 Btu/hour Janitrol combustion heaters in wing tip pods on the Douglas C-124A. Four of these units, and a 200,000 Btu/hour unit total 2.6 million Btu/hour—handle all anti-icing requirements as well as flight deck and cabin heat—increase capacity by 900,000 Btu/hour over that of the 12-unit Janitrol installation employed on the early version of this giant . . . Operational performance is improved: heaters are located at the tip of the wing where highest temperatures are required and the plane's service ceiling is upped 1,300 feet by the favorable end plate effect of the pods. This is another good example of Janitrol's long combustion engineering experience successfully teamed up with aircraft builders to "raise the ceiling" and "extend the range" of aircraft heater performance . . . The earlier in the design stage you call in your Janitrol representative on your heating problems—the better.

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HEATERS WITH THE WHIRLING FLAME **Janitrol**

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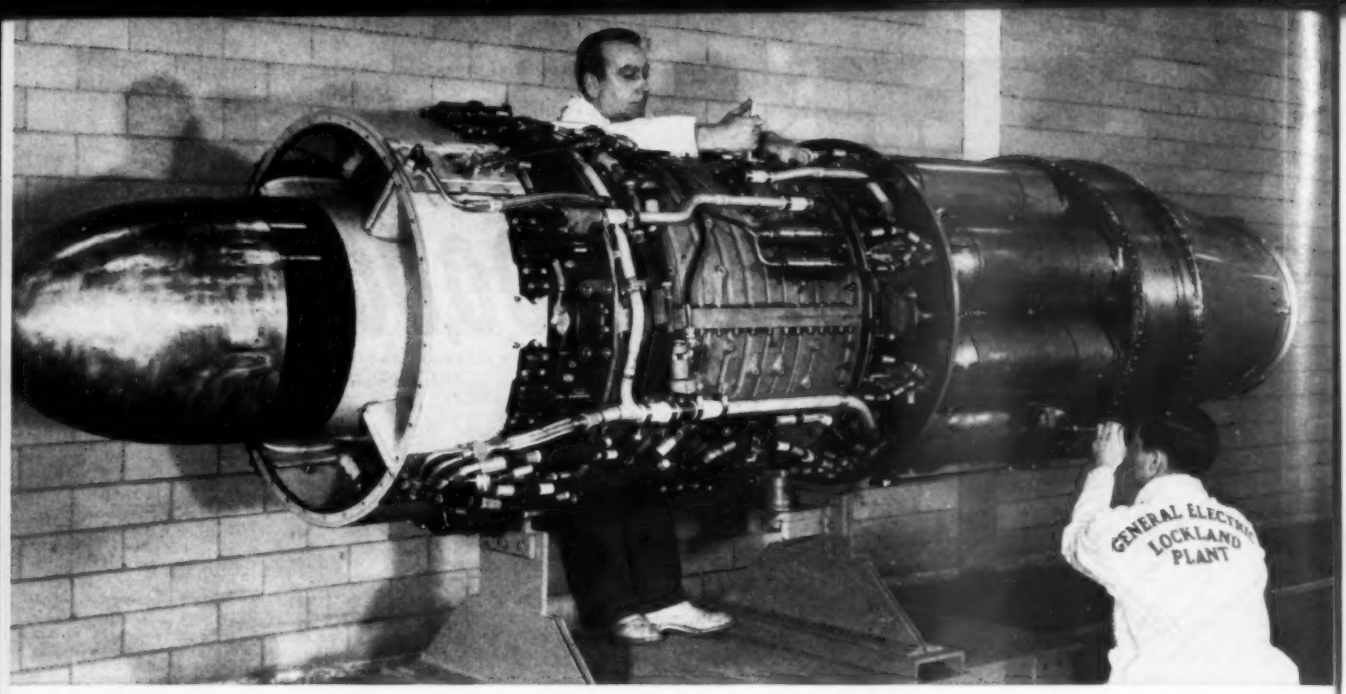


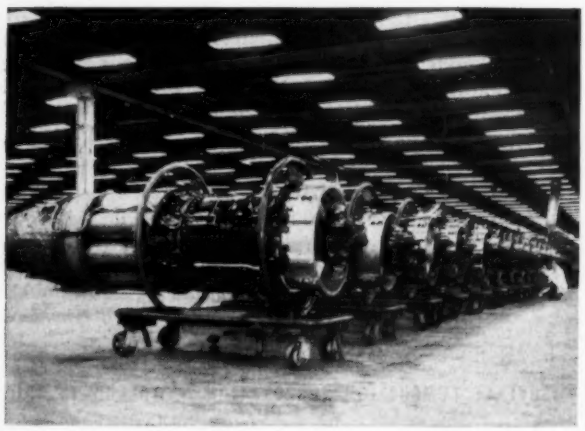
THE J47-GE-27, newest production model in G.E.'s "all-weather" J47 series, will power the North American F-86F Sabre. A modified -27 will power the Navy's FJ-2 Fury, carrier version of the F-86. Sister engines, the -23 and -25, are powerplants for the Boeing B-47B Stratojet.

NEWEST "ALL-WEATHER" ENGINE IN PRODUCTION

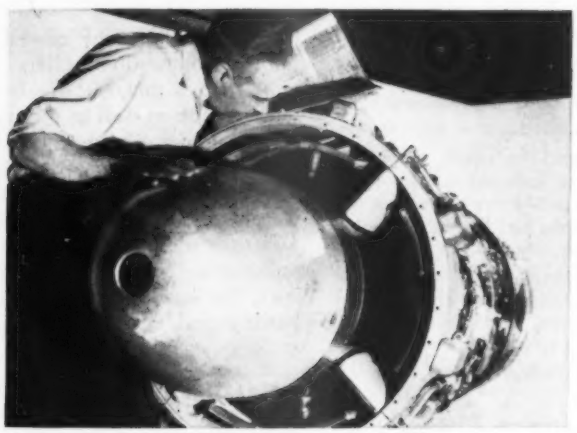
J47-27 Has 10% Greater Thrust Than Present F-86 Engine, Lower Fuel Consumption Without Size or Weight Increase

By incorporating a more efficient compressor, heated inlet surfaces and retractable air screens, the new high-performance J47-27 is capable of operation under extreme conditions of weather. An improved combustion system with high-voltage, opposite polarity ignition and larger crossover flame propagation tubes allows automatic starts to above 40,000 feet.

Constant product improvement is standard practice at General Electric with all aviation equipment. The benefits of this policy can be yours by calling on your G-E Aviation Specialist or writing the *General Electric Company, Schenectady 5, N. Y.* 210-27

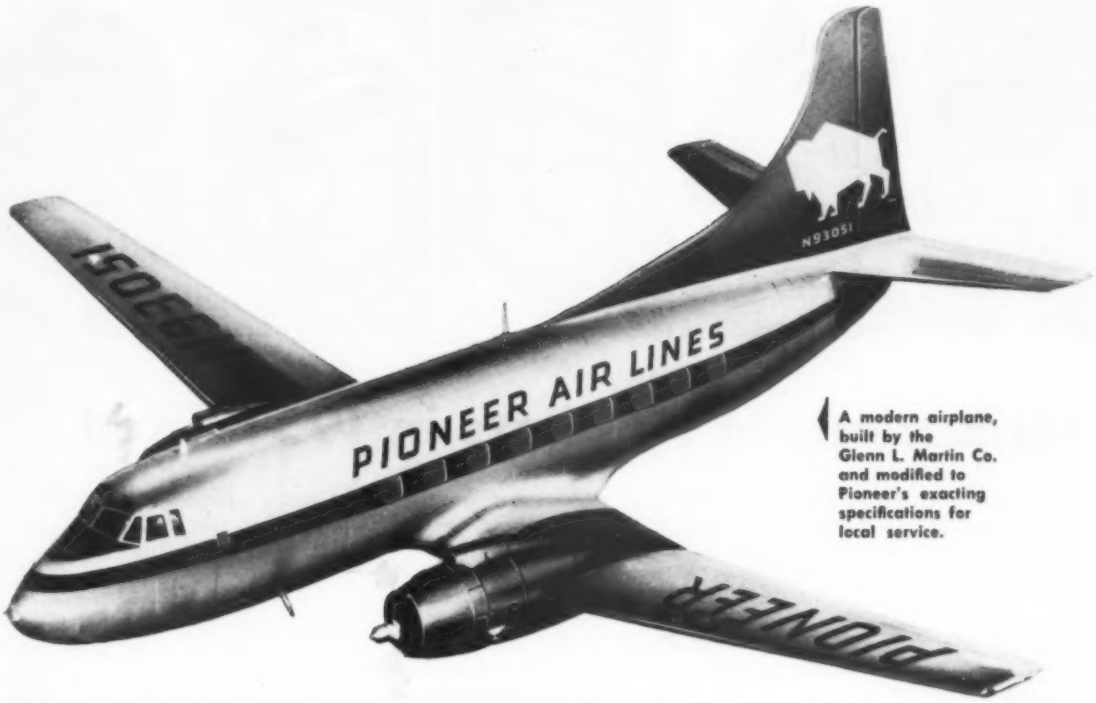


NOW IN PRODUCTION at Lynn, Mass., and soon to roll off the line in quantity at the Lockland, Ohio plant, the J47-27 is the third in G.E.'s series of all-weather engines. In addition, two major automobile manufacturers will start producing the -27 this year under license.



"HOT NOSE" PREVENTS ICING on the -27. Hot air bled from the compressor warms hollow parts of the nose, inlet vanes and struts. Inlet air screens retract at the touch of a button to eliminate the last icing problem. The retraction of the screens also eliminates a loss of thrust.

GENERAL ELECTRIC



A modern airplane, built by the Glenn L. Martin Co. and modified to Pioneer's exacting specifications for local service.

PIONEER PIONEERS AGAIN

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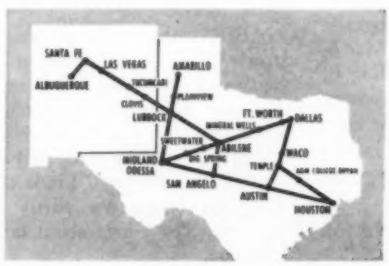
PACEMASTERS

A POWERFUL FLEET OF BIG, 270 MILE PER HOUR LINERS

Now, America's *first* local service airline brings new, improved service to the Southwest. This fleet of big, modern postwar planes brings passengers extra comfort, extra convenience, *extra speed* . . . provides more seats and accommodations to fill the growing passenger demand.

New Pacemaster schedules cut former flight time 25% . . . *offer fast connections and express speeds to and from Southwest cities served by trunk and intercontinental carriers* . . . offer the same famous Pioneer frequency of flights.

Since its inauguration in 1945, as the nation's first local service carrier, Pioneer has steadily grown . . . its service to the Southwest has been constantly improved. With the acquisition of this big Pacemaster fleet, the unique character of Pioneer's fine local service will remain the same, but the quality of that service will be vastly stepped up. Pioneer will continue to set the pace in the Southwest . . . and to uphold the nation's proudest standards of modern air travel.



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Finest, Fastest Service to 21 Key Southwestern Cities

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Jensen LeClaire Cullen Coleman Darnell

Contributions of 10 Pilots in 1951 Cited

THE AIRLINE PILOT is a man with a full time job that each year calls for more skill than in the preceding year. The ever increasing speed of modern transport aircraft and the advances made toward all weather and on-time operations find their focal point in the cockpit. In the final analysis, regardless of aids, the pilot bears the responsibility for important decisions every day.

Intelligent performance of these duties is expected and achieved. Over and above these normal demands, many pilots manage to find time to delve into problems in engineering research, etc., solutions which contribute to the well being of the industry, individual companies and flying.

For the third successive year, from nominations submitted by the individual airlines and the Air Lines Pilots Association, AMERICAN AVIATION has selected a group of top pilots who made such contributions in 1951.

Captain Walter Jensen

American Airlines

There are many things to be learned about radar in traffic control and landing applications. Until these areas of ignorance and misunderstanding are cleared up there will continue to be an acute need for a meeting ground for pilots, engineers, and control agencies.

American Airlines' Captain Walter Jensen has made major contributions to this critical field. Working with the Air Transport Association he has been instrumental in the establishment of the first full-scale radar departure control set-up, established at Washington National Airport in the past year. He was instrumental in setting up radar procedures, helped work out suitable manuals, monitored the operation in the air and on the ground, and gave freely of his own time to help make the operation successful.

Jensen, 36, joined American in 1940 following service with the Army Air Force, returned to service following Pearl Harbor, and flew with the Air Transport Command in the India-China-Burma Theater.

•

Captain J. B. LeClaire

Trans World Airlines

Inauguration of service with new type aircraft is one of the areas where the airline engineering test pilot proves his real worth. Between the initial contract to purchase an aircraft and delivery of the first production plane, the operations department must be prepared to meet the actual and imagined requirements of maintenance, engineering, and pilot personnel. This is aggravated by the wide differences of opinion even within the individual groups.

TWA's Captain J. B. LeClaire served TWA and the industry in the sound developmental work to which he made contributions during his company's early operations with Martin 2-0-2 and 4-0-4 aircraft. In the past two years he guided much of TWA's efforts to make the 4-0-4 a "pilot's airplane."

LeClaire's work included special icing tests to determine lateral control of both series aircraft, cockpit instrumentation lay-out design, pioneering of TWA's cockpit red-lighting program, acceptance flights on both the Martin 2-0-2 and 4-0-4 and the spearheading of cockpit standardization efforts within the company. These specific items were only part of his contribution in his role as coordinator of engineering and pilot requirements.

LeClaire has been with TWA for 16 years.

Captain George P. Cullen

Trans-Pacific Airlines (Aloha Airline)

It is in the loading manifest that pilots and ground crews adjust traffic requirements with operational limitations. Here fuel, oil, mail, freight, and passenger weights are totaled and their distribution in the various compartments evaluated for effect on the plane's performance and range. Every flight requires such a manifest, one which must be simple to work, readily checked, and above all accurate.

Today no loading manifest is really new. It is a blend of hundreds of methods that have been arranged to meet a particular operator's needs. Aloha's Captain George P. Cullen designed such a manifest for his company. It is a single-sheet manifest with well-arranged blocks for entry of critical data and a simple means of arriving at a final determination of center-of-gravity limits.

When the pilot's knowledge of every-day operational needs is brought to the front in such forms, everyone benefits. Like most pilots who have some tangible contribution to their credit, Captain Cullen is always on the alert for ways of promoting TPA. Suggestions for improving passenger service, traffic promotion, and even advertising efforts have reflected his activities beyond the scope of his duties.

•

Capt. H. O. Coleman

United Airlines

Few subjects have ever merited greater effort in the aviation field than the weather. Much has been done in the way of providing electronic and visual aids, at a cost of many millions of dollars, to help the pilot and ensure on-time operations in all kinds of weather. This has been only partly successful. Little has been done about tailoring the weather.

Panagra is the only U. S. airline with 23 years of experience in South America.

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PANAGRA'S "El Pacifico"

El Pacifico and *El Inter-Americano* fly from Miami to Panama, over the route of Pan American World Airways, and on to Buenos Aires over Panagra's route.

the only DC-6B tourist service to South America

● At a saving of up to 48%, you can fly in a pressurized cabin in the fastest plane in tourist service anywhere!

Take *El Pacifico* for smooth over-ocean flights to historic Panama, lovely Lima, scenic Santiago . . . then cross the continent in 4 hours to Buenos Aires. You can fly all the way for only $675 round trip from New York.

El Pacifico service is in addition to daily service by deluxe *El Inter Americano*, famous sleeper express. For reservations, call your Travel Agent or Pan American World Airways, U. S. Sales Agent for—

Pan American-Grace Airways

Captain Coleman, with United Air Lines since 1937, spent two months in the past year attempting to do something about the weather. Having become interested the possibility of seeding low flying clouds and fog areas to clear the airport for bad weather landings, United Air Lines equipped a Douglas DC-3 with suitable equipment and started making flights using a method proposed by two Oregon experimenters, H. M. Brandau and E. K. Kooser.

United has not announced the results of these tests, which are very like those conducted by the Air Transport Association several years ago. But Coleman's willingness to carry on these flights under critical weather conditions provided another chance for the industry to obtain the latest word on what can be done about the weather.

Coleman, who has also been the ALPA engineering representative, assisted United in developing its present cockpit layout, particularly the instrument panel layout, and worked on UAL's installation of VOR and RMI equipment.

•

Captain Cecil Darnell

Braniff International Airways

The Pratt & Whitney R-2800 engine is one of the most widely used commercial aircraft engines in the world. It powers the Douglas DC-6, 6A, and 6B models; the Convair Liners, 240 and 340; the Martin 2-0-2 and 4-0-4 and the Curtis C-46. It is also a widely used military engine.

Braniff's Captain Cecil Darnell initiated and coordinated a program to assure that his airline's R-2800 engines were operated to their peak performance. He started on his program when he found that no two of Braniff's Douglas DC-6's gave the same performance for a set of conditions which were apparently identical. Having studied internal combustion engines very thoroughly (he has studied model engines in a home workshop for 12 years) he attacked the problem from engineering and operational standpoints.

Result has been that Braniff is now using his method of controlling fuel-air ratio and brake specific fuel consumption during climb, cruise, and descent. He set up simple charts, now standard equipment at Braniff, to translate his findings into a useable tool for all pilots. Darnell also established a different starting procedure which eliminated most of the backfiring Braniff had been experiencing.

An indication of Braniff's reaction is that Darnell has been placed on the pilot supervisory staff to carry on his work in improving operations methods.

•

Captain W. W. Moss

Pan American World Airways

Safety of operation remains one of the most critical challenges to the airline industry. There are many scales on which this safety can be judged. On most of these scales the situation is improving constantly. Despite this, the new and larger aircraft carry more people and attract more attention. When trouble develops, this attention is damaging to the industry and the public. It is not enough to cite past records.

Pan American's Capt. William W. Moss personifies a group of pilots who carry their piloting experience into the meetings and discussions where the future trend of air safety is determined. During the past year his activities have been highlighted by his active participation in the CAB's annual review of airworthiness regulations, his work with the Prototype Aircraft Advisory Committee, including a survey of jet transport developments in Europe, and his excellent paper on air safety (American Aviation, Feb. 18) before the Institute of the Aeronautical Sciences, pointing the way to safer flying.

Only 37, Moss has been flying more than 16 years, has logged about 12,000 hours and made more than 230 trans-Atlantic flights. He is chairman of ALPA's Council 36 Engineering and Air Safety Committee, and ALPA liaison representative to the CAB-CAA Performance Committee. He has been with PAA since 1939.

•

Captain Don Alldredge

Empire Air Lines

One of the acknowledged shortcomings of the air transport industry has been its failure to put across its message of accomplishments to the public. There has been little, if any, joint action in educating the public regarding the service and safety of the airlines, their contribution to the nation's economy, and even to its defense efforts.

Empire's Don Alldredge has made valuable inroads in this field. Having had previous experience as a radio entertainer, Alldredge volunteered to cooperate in producing a local radio show which is called "Empire's Singing Pilot." Alldredge, between tunes "from out of the blue," puts across the job which Empire and the airlines in general are doing.

Alldredge's script is packed with information about airline operation, safety, scheduling, route certification, and similar matters.

The public has shown interest. The program at Boise is sponsored but a number of other stations along Empire's routes use the program as a public service feature. Alldredge also makes personal appearances before civic groups in his efforts to sell air transportation to the public.

•

Capt. Paul F. Untersee

All American Airways

Many tools have been designed to simplify the pilot's job in the cockpit, to reduce to simple terms the complex relationships with which he must work in his day to day flights. Some of these tools are next to useless. Others are important tools, such as horsepower computing scales. Each must be judged independently.

All American's Capt. Paul F. Untersee has designed such a tool and the airline thought enough of it to adopt it. The computer has been copy-

Alldredge

Moss

Untersee

Foster

Stout

Compare—see how much you save when you fly United Air Lines!

Between	First-class rail plus lower berth	First-class Mainliner	Hours saved by flying United	Dollars saved by flying United
Chicago and New York	16 hrs. $49.79	2 hrs. 55 min. $45.10	13 hrs. 5 min.	$4.69
Philadelphia and Detroit	13 hrs. 22 min. $35.51	2 hrs. 15 min. $27.85	11 hrs. 7 min.	$7.66
New York and San Francisco	71 hrs. $144.45	11 hrs. 35 min. $158.85	59 hrs. 25 min.	(Flying United still results in an actual cash saving because meals are included in your Mainliner fare and there are no tips aloft.)
Seattle and Los Angeles	30 hrs. $59.41	4 hrs. 50 min. $64.55	25 hrs. 10 min.	

Comparison refers to standard fare trains. Tax not included. Fastest times shown. United's Family Plan and Tourist Fares save you even more!

Unlike most prices, Mainliner fares have stayed low—they're still at about their 1941 level. So you save money, as well as time, by flying United Air Lines today! And remember, the United fares above are for first-class air travel on the most spacious and luxurious Mainliners, with full-course meals at mealtimes included. For reservations call or write United Air Lines or an Authorized Travel Agent.

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"C" WINDSHIELD CLEANER

Readily removes oil scum and bug juice from glass and plastic. Leaves a crystal-clear surface. Will not cause clouding or crazing.

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A money saving concentrated degreasing solution. Dilute before use to make a powerful, water rinsable solution. Dries free from oil film.

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righted. The tool is a sliding scale computer to establish the relationships of visibility and ceiling under which the pilot may make an approach. It presents in a simple fashion the minimum ceiling which may be used with any given visibility.

All American has used the other side of the inexpensive cardboard computer to provide a crosswind computer which translates runway number and wind direction into a reading of maximum allowable cross wind permissible. This is a scale designed by George Allman, formerly with AAA.

●

Captain Arthur F. ("Red") Foster
Trans World Airlines

One of the toughest public relations problems for airlines and airports in recent months has been centered in the New York area, where the noise problem and successive accidents have caused civic groups to demand airport closings.

TWA Captain Arthur F. ("Red") Foster, elected N. Y. representative for the Air Lines Pilots Association, has been ably representing the airlines, as well as the pilots and aviation in general, by actively working with the various protesting civic groups, as well as with the Rickenbacker committee and Port of New York Authority. He has been hearing and analyzing the complaints of the citizens within the airport areas, explaining aviation's position, and educating the people to the necessities and advantages connected with the maintenance of the present airport set up.

After having been turned down in 1930 as being too young, Captain Foster finally joined TWA in 1939 as co-pilot and became a captain in 1941.

●

Captain Clifford L. Stout
California Central Airlines

During the past year several incidents have occurred in airline operations which stress the need for better identification of control switches and other cockpit controls. Improved lighting and more prominent control design both promise improvements in this field.

California Central's Captain Clifford L. Stout, chief pilot, brought about several changes in the company's Martin 2-0-2 aircraft which fit into this category of improvement. A ¾ inch extension on the VHF NAV switch on the pilot's and co-pilot's jack box, proposed by Stout, now makes it possible to have "touch" identification of this control, minimizing the possibility of confusion with other nearby control switches, even in the darkened cockpit.

1951 Manufacturers Salaries

According to records on file with the Securities and Exchange Commission.

Boeing Airplane Co.

William M. Allen, president, $70,000 (up $10,000) plus $16,500 bonus; **Wellwood E. Beall,** vice president-engineering and sales, $46,665 (up $8,330) plus $11,000 bonus; **Edward C. Wells,** vice president-engineering, $37,500 (up $6,500) plus $9,000 bonus; **Fred P. Laudan,** vice president-manufacturing, $33,335 (up $4,000) plus $8,500 bonus; **J. E. Schaefer,** vice president and general manager, Wichita Div., $33,335 (up $4,000) plus $7,500 bonus; **J. O. Yeasting,** vice president and controller, $25,835 plus $6,250 bonus.

Consolidated Vultee Aircraft Corp.

LaMotte Cohu, president, $75,000 plus $10,928 in retirement; **Robert B. Watts,** vice president and general counsel, $37,000 (up $1,000) plus $4,202 in retirement; **R. H. Biron, Jr.,** vice president, $32,500 (up $4,583) plus $2,349 retirement; **W. C. Rockefeller,** executive assistant to chairman of the board, $31,500 (up $4,750).

Curtiss-Wright

Paul V. Shields, chairman of the board, $102,160 (down $120) plus $119.82 in retirement fund; **Roy T. Hurley,** president, $89,480 (up $100) plus $65,000 in incentive compensation and $81.42 for retirement; **Joseph F. McCarthy,** vice president-finance, $61,740 (up $7,274) plus $25,000 in incentive compensation and $81.42 retirement; **Edward M. Powers,** vice president-engineering, $30,575 (up $7,620.78) plus $12,000 incentive compensation and $81.42 pension.

Douglas Aircraft Co.

D. W. Douglas, president, $127,700 (up $6,400) plus pension of $4,792.42; **F. W. Conant,** senior vice president-manufacturing, $60,947.93 (up $10,172.93) plus $4,792.42 in retirement; **F. E. Hines,** counsel, $28,540.02 plus $1,345.64 retirement; **A. E. Raymond,** vice president-engineering, $54,311.29 (up $3,636.29) plus $6,837.91 pensions.

Fairchild Engine & Airplane Corp.

Richard S. Boutelle, president, $66,742 (up $8,042) plus $26,000 in bonuses and $14,598 in pensions; **Arthur F. Flood,** vice president-comptroller, $27,950 (up $6,750) plus $19,000 in bonuses and $9,257 in pensions; **Willard L. Landers,** vice president, $35,665 plus $10,000 in bonuses and $5,229 in pensions.

Good Opportunity for Airports Editor

World's largest aviation publishing house looking for Airports Editor, preferably with technical background and with appreciation of economic aspects of airport operation. Based in Washington, D. C., successful applicant will get unique opportunity to cover airport activities throughout the U. S. Salary open.

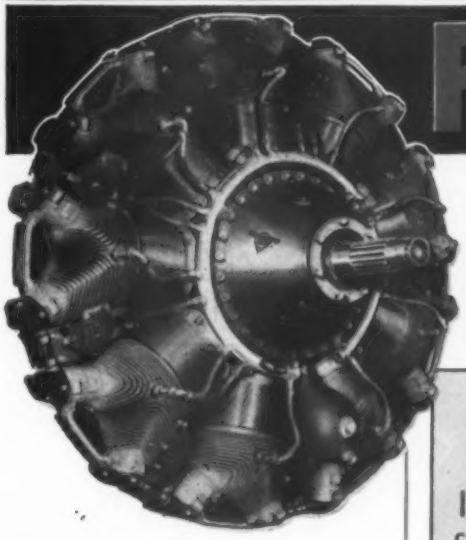
Write Editor, **American Aviation,** 1025 Vermont Ave., N. W., Washington 5, D. C. fully outlining experience and qualifications, biographical data, and photograph.

For DEPENDABLE PERFORMANCE

CONTINENTAL...

R-975

AIR-COOLED RADIAL



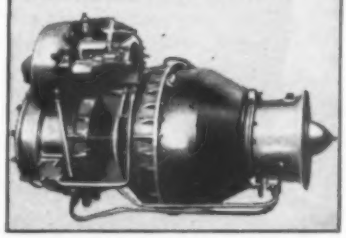
OF INTEREST to all segments of the aircraft industry is the fact that the Continental R-975, as redesigned for helicopter use, is now in production at C.A.E., for such craft as the Piasecki HUP I and HUP II and the Kaman HOK.

The completeness with which this air-cooled radial, rated at 525 h.p., has met the helicopter's high performance standards, suggests its choice for other exacting applications as well. It has special significance for manufacturers of conventional planes.

It offers them a power plant with an *extra margin of stamina,*—a margin proved by performance under conditions far more severe than are imposed on the engine of an airplane of fixed-wing type.

ON THE WAY...
GAS TURBINE POWER FOR INTERMEDIATE AIRCRAFT

C.A.E. is planning production of the Continental-Turbomeca Family of gas turbines. These advanced power plants comprise four basic types—jet power, shaft power, ducted fan and air compressor—and range from 200 to 1,000 h.p. Tests forecast their wide utility, not only in civilian and military aircraft of medium power, but in numerous other applications, some obvious and others unconventional. We invite inquiries from manufacturers or individuals having specific uses in mind.



There are employment opportunities for engineers and others desiring to make a career in the field of small turbines for commercial and military use. Write giving your background and the type of work desired.

CONTINENTAL AVIATION & ENGINEERING CORPORATION

1500 ALGONQUIN AVE., DETROIT 14, MICHIGAN

SUBSIDIARY OF CONTINENTAL MOTORS CORPORATION

LEADING AIRLINES AGREE

the finest airline seats are TECO built!

The outstanding appearance, comfort, strength and low weight of only 25½ lbs. ppp (per passenger place) are the features that have brought the TECO-314 airline seat concentrated interest and approval of major airlines all over the world. The TECO-314 is in full production and is available for wedjit or track mounted installations. Luxury seat comfort is provided for the first time in this hi-density seat, now available in standard, narrow and wide models in either single, double or triple units. Typical of TECO engineering that assures you of truly advanced features is the added versatility of high G-load ability, especially designed for aft-facing seat installations. An informative folder suitable for engineering use and permanent file records will be sent upon request. Write for your copy today.

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TRANSPORT EQUIPMENT CO.
Burbank • California

REPRESENTED IN CANADA BY:
RAILWAY & POWER ENGINEERING CORPORATION
LIMITED • 3745 St. James Street • Montreal 30, P. Q.

Airport News Digest

ONE of the opening "shots" in a $250,000 community relations program that has been launched by the National Air Transport Coordinating Committee, in a frank effort to make terminal airports more acceptable to the people living near them was a full-page industry-sponsored advertisement that was run in daily newspapers in the New York-New Jersey metropolitan area earlier this month.

94% OF FLIGHTS OVER NEWARK ELIMINATED
NEWARK
THE "PREFERENTIAL RUNWAY SYSTEM" WHICH DIVERTS TRAFFIC FROM HEAVILY POPULATED AREAS DURING LANDINGS AND TAKE-OFFS WILL BE INSTALLED
NO TAKE-OFFS OVER HILLSIDE OR THE WEEQUAHIC SECTION OF NEWARK.
RUNWAY TEN FOR TAKE-OFFS
RUNWAY TWENTY-EIGHT FOR LANDINGS
RUNWAY SIX FOR TAKE-OFFS
Port Newark
Bay
Meadows
100% OF TAKE-OFFS AND LANDINGS OVER ELIZABETH ELIMINATED
ELIZABETH
800 TRAINING FLIGHTS OUT
TRANSFER ALL ROUTINE TRAINING FLIGHTS FROM NEWARK TO OTHER AIRPORTS (Eliminate 800 training flights monthly previously conducted at Newark)
ALL APPROACHES TO THE AIRPORT WILL BE MADE OVER NEWARK BAY, EXCEPT ON RARE OCCASIONS WHEN STRONG EASTERLY WINDS REQUIRE THE USE OF RUNWAY TEN. (IT IS ESTIMATED THAT RUNWAY TEN WILL BE NEEDED LESS THAN 1%)
Newark Bay
OPERATIONS ONLY IN GOOD FLYING WEATHER (1000 FOOT CEILING, 3 MILES VISIBILITY)

The advertisement, which featured the map shown above, depicted graphically the manner in which procedures and traffic patterns to be observed in connection with the reopening of Newark Airport to commercial traffic would make the airport a "better neighbor" to the people of the Newark-Elizabeth area.

Similar advertisements will be run with regard to other airport situations, as required, but no large advertising campaign is contemplated at this time. What NATCC does propose to do, with a planned budget of $250,000, is to tackle other individual airport problems *before* they arise, by visiting communities, polling sentiment, and making speeches before local groups.

Behind this program, to which the Air Transportation Association this month was asked to make an initial contribution of $50,000 and the Aircraft Industries Association $25,000, is recognition of the hard fact that there has been a major shift in local public opinion about the worth of airports to the community.

• A report on the lighting conference held in Columbus by the American Association of Airport Executives will appear in the next issue.

HELPING AMERICA BUILD FASTER

Lumbermen and Beechcrafts work together

Key men in almost 50 lumber concerns today get *more* done with company-owned Beechcrafts. They go when they need to — they give those distant jobs "on-the-spot" attention. They cut field-trip transit time as much as 75% by use of their Beechcrafts.

Almost every kind of business can profitably use company-owned Beechcrafts, and help America build *faster* by applying travel speed to defense and consumer goods production alike. Apply Beechcraft travel schedules to your business operations. Call your Beechcraft distributor. Or write today on your company letterhead to Beech Aircraft Corporation, Wichita, Kansas, U.S.A.

BEECHCRAFTS ARE THE AIR FLEET OF AMERICAN BUSINESS

LOCKHEED T-33 TRAINER POWERED BY ALLISON J33 TURBO-JET (Also F-80 Shooting Star)
NORTHROP F-89 SCORPION POWERED BY TWO ALLISON J35 TURBO-JETS WITH AFTERBURNERS
GRUMMAN F9F-3 PANTHER POWERED BY ALLISON J33 TURBO-JET
REPUBLIC F-84 THUNDERJET POWERED BY ALLISON J35 TURBO-JET
LOCKHEED F-94 ALL-WEATHER FIGHTER POWERED BY ALLISON J33 TURBO-JET WITH AFTERBURNER
DOUGLAS A2D SKYSHARK POWERED BY ALLISON T40 TURBO-PROP
NORTH AMERICAN XA2J-1 SAVAGE POWERED BY ALLISON T40 TURBO-PROP
CONSOLIDATED P5Y FLYING BOAT POWERED BY FOUR ALLISON T40 TURBO-PROPS

Around the world ALLISON JET ENGINES have accumulated more than 1,600,000 hours in the air

an unsurpassed record of experience covering every condition of training, alert and combat

GM GENERAL MOTORS

Allison DIVISION OF GENERAL MOTORS, INDIANAPOLIS, INDIANA

Builders of J35 Axial, J33 Centrifugal Flow Turbo-Jet Engines, T38 and T40 Turbo-Prop Engines

SHELL AIR QUIZ

Question:

Does air travel cost more or less per mile than 10 years ago?

Answer:

While the cost of living has almost doubled, air travel today costs less per mile than a decade ago.

Question:

Which Aviation Fuel in the U. S. A. today flies the most passengers?
. . . the most air freight?
. . . the most air mail?

Answer:

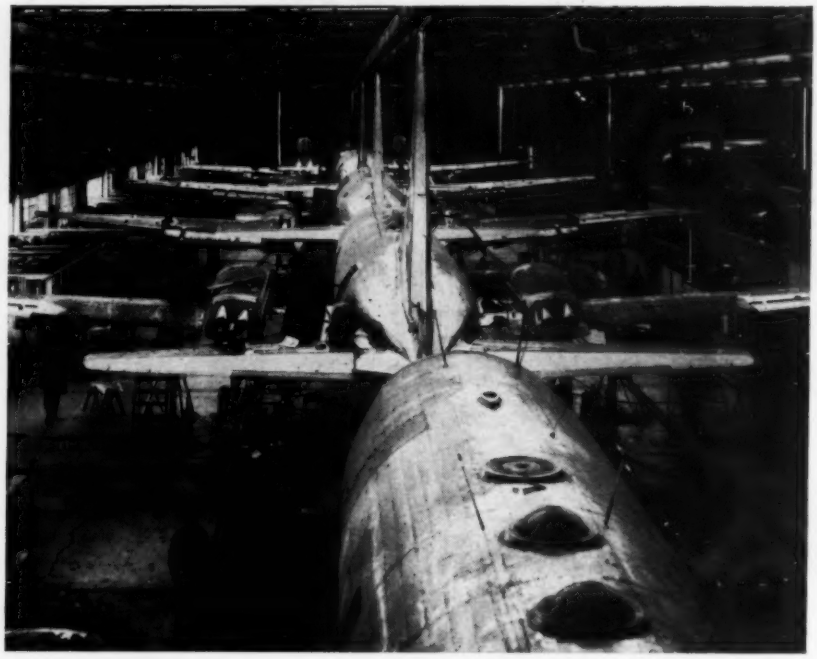
SHELL AVIATION FUEL

SHELL OIL COMPANY

50 WEST 50TH STREET, NEW YORK 20, N. Y.
100 BUSH STREET, SAN FRANCISCO 6, CALIFORNIA

SHELL

Production Spotlight



Additional T-29 trainers have been ordered by the USAF from Consolidated Vultee Aircraft Corp. The new version of the commercial Convair 240 is the T-29D, a bombardier trainer, equipped with the Air Force's K-1 bombsight and new electronic equipment. Gross weight of the T-29D's will exceed 40,000 pounds.

Engineer Salary Bill Seen as Threat

American aircraft companies, already plagued by a shortage of engineers, are in for more serious problems if an amendment proposed by Sen. John W. Bricker (R., Ohio) and passed by the Senate should finally get through a joint House-Senate conference and be enacted into law. The amendment would exempt all engineers from salary controls and would inevitably result in increased manufacturing costs for airframe and engine builders.

An even more serious result might be that aircraft producers would find themselves outbid for engineering talent by other industries if all such controls were removed under the forthcoming version of the Defense Production Act. Engineers' salaries are now governed by the actions of the Salary Stabilization Board.

Another action involving aircraft engineers which promises to have long-range significance is a new contract between Rheem Manufacturing Co.'s aircraft division at Downey, Calif., and the independent Engineers and Architects Association providing for a union shop. EAA believes this is the first union shop pact to be won by a professional organization on the West Coast.

In other aircraft labor developments:

• **The AFL-Machinists** presented Lockheed Aircraft with their wage demands for this year. The Lockheed contract expires August 22 and the IAM then starts discussions with Boeing-Seattle, Douglas-Santa Monica Douglas-El Segundo, and Convair-San Diego.

• **Unauthorized strike** by IAM workers at Republic Aviation ended after two days when union leaders urged the men to return. The work stoppage began over drinking water which Republic employes called "unfit for drinking," and over several other grievances. Both sides agreed to mediation of their differences. Republic estimated production of 10 F-84 Thunderjets was lost.

849 Certificates of Necessity Issued by DPA

Defense Production Administration's certificate-of-necessity program, permitting companies to write off the cost of new plants in five rather than 20-25 years, has resulted in the issuance of 849 such certificates for the aircraft industry since the program started shortly after Korea. These rapid amortization certificates represent an industry investment of $802,926,000, although DPA permitted only $524,425,000 to be written off in five years. The remainder may be amortized in the conventional length of time. Still on file by aircraft firms are 366 additional applications representing an investment of $138,-412,000.

The DPA policy has proved advantageous to the airlines as well. Six certificates, covering an investment of $168,361,000 for new planes and equipment, have been approved but only $131,778,000 were allowed. Five other requests representing a proposed investment of $17,417,000 are still to be acted on. And four applications to cover an $814,000 investment in airport terminal services (hangars, etc.) are also pending.

Hughes Asks RFC for Three Months Grace

Continued trouble with the engine-propeller combination has caused Hughes Aircraft Co. to ask the Reconstruction Finance Corp. for an additional three-month extension to get the HK-1 eight-engine flying boat into the air. New target date for the flight is September 1. The plane flew briefly on its third taxi test in November, 1947. RFC holds title to the $33 million craft, even though Howard Hughes has $17-18 million of his own money invested in it.

New Production Deputy

New deputy for production at the USAF's Air Materiel Command is Maj. Gen. Clarence S. Irvine. He formerly was responsible for expediting machine tools and production of the Boeing B-47 jet bomber.

Engineering to the *Nth* power...

land-based performance for water-based aircraft!

Take a *good* look at the Navy's Convair-built P5Y ... *three times better* than any previous water-based design! This turboprop globe-roamer is as nimble as the best World War II fighters. A cargo-transport version, the R3Y, will soon be in service.

Further results of Convair's hydrodynamic studies: the jet fighter-bomber "Skate" design, capable of sonic speeds *anywhere;* and now research on a *supersonic* water-based Delta Wing.

Land-based or water-based, Convair aircraft are engineered for the maximum, the Nth degree of air power ... *the Nth Power!*

Flags are U. S. Navy Signal for..."Well Done!"

Convair-Liner—unequaled for safety, preferred by passengers and pilots ... more Convair-Liners used by more airlines than any postwar plane.

IN THE AIR IT'S

CONVAIR

Consolidated Vultee Aircraft Corporation • San Diego & Pomona, California • Fort Worth & Daingerfield, Texas

☆ ☆ CONVAIR IS ADDING ANOTHER 1½ MILLION SQUARE FEET OF FLOOR AREA TO ITS PLANT FACILITIES...MAKING A TOTAL OF MORE THAN 9 MILLION SQUARE FEET DEVOTED TO RESEARCH AND PRODUCTION PROJECTS FOR AIRCRAFT, GUIDED MISSILES AND ELECTRONICS!

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The world's **4100** airline planes
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+ **2050** military transports
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The men who design them,
buy them,
fly them,
maintain them—
and their ground aids and equipment—
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If you're in aviation,
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advertise in **American Aviation**
—the only magazine of transport aviation.

ABC ABP

BOEDY'S ALBUM

T. C. ("Ted") Coleman
Standard Oil of Calif.
at Encampment, Wyo.
September 11, 1948

John A. Collings (QB)
Trans World Airlines
at Encampment, Wyo.
September 11, 1948

R. S. ("Dick") Boutelle (QB)
Fairchild Aircraft
at Encampment, Wyo.
September 11, 1948

Paul Mantz,
at A Bar A Ranch
Encampment, Wyo.
September 11, 1948

M. W. ("Bill") Downs
at A Bar A Ranch
Encampment, Wyo.
September 11, 1948

Don Marshall (QB)
at A Bar A Ranch
Encampment, Wyo.
September 11, 1948

J. C. ("Jim") DeLong
Trans World Airlines
at Encampment, Wyo.
September 11, 1948

Paul Markman
at A Bar A Ranch
Encampment, Wyo.
September 11, 1948

Paul E. Richter (QB)
TACA Airways, Inc.
at Encampment, Wyo.
September 11, 1948

Wayne W. Parrish
AMERICAN AVIATION
at Encampment, Wyo.
September 11, 1948

C. E. ("Chuck") Beard
Braniff Airways, Inc.
at Encampment, Wyo.
September 12, 1948

Charles E. Hunter
Aubrey Keif (QB)
at Encampment, Wyo.
September 12, 1948

Jack Frye (QB)
General Aniline
at Encampment, Wyo.
September 12, 1948

John B. Walker (QB)
at A Bar A Ranch
Encampment, Wyo.
September 12, 1948

Helen R. Steinson
Continental Airlines
Denver, Colorado
September 15, 1948

Betty Zoric
Continental Airlines
Denver, Colorado
September 16, 1948

Candid snapshots from the famous collection of Kenneth

BOEDY'S ALBUM

Don R. Wilson
Continental Airlines
Denver, Col.
September 16, 1948

J. F. ("Jack") Daniels
Continental Airlines
Denver, Col.
September 17, 1948

Mary Boyle
United Air Lines
Denver-Los Angeles
September 17, 1948

Nell G. Goodall
Imperial Oil Co.
Los Angeles, Cal.
September 17, 1948

Fred M. Milam
Los Angeles Airways
Los Angeles, Cal.
September 20, 1948

Harry A. Slemmons
Los Angeles Airways
Los Angeles, Cal.
September 20, 1948

Wyman Ellis (QB)
Civil Aeronautics Admin.
Inglewood, Cal.
September 20, 1948

George L. Dillaway
Los Angeles Airways
Los Angeles, Cal.
September 20, 1948

John De Blauw
Los Angeles Airways
Los Angeles, Cal.
September 20, 1948

C. ("Chuck") Nicholas
The Texas Co.
Los Angeles, Cal.
September 20, 1948

A. F. ("Art") Kelly
Western Air Lines
Los Angeles, Cal.
September 20, 1948

K. F. ("Ken") Ridley
Hughes Aircraft
at Burbank, Cal.
September 21, 1948

R. K. ("Bob") Bias
Lockheed Aircraft
Burbank, Cal.
September 21, 1948

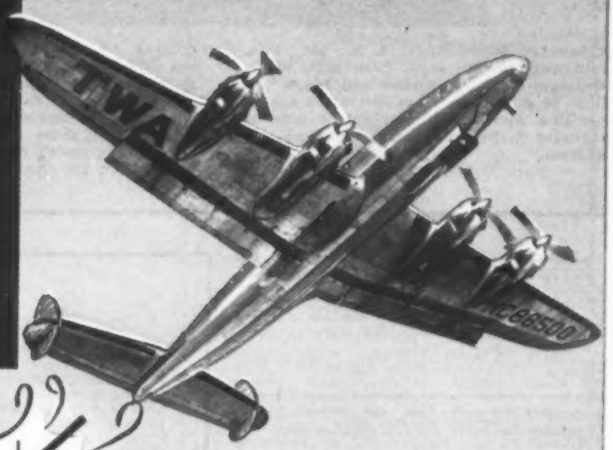
Paul R. Strohm
Trans World Airlines
Burbank, Cal.
September 21, 1948

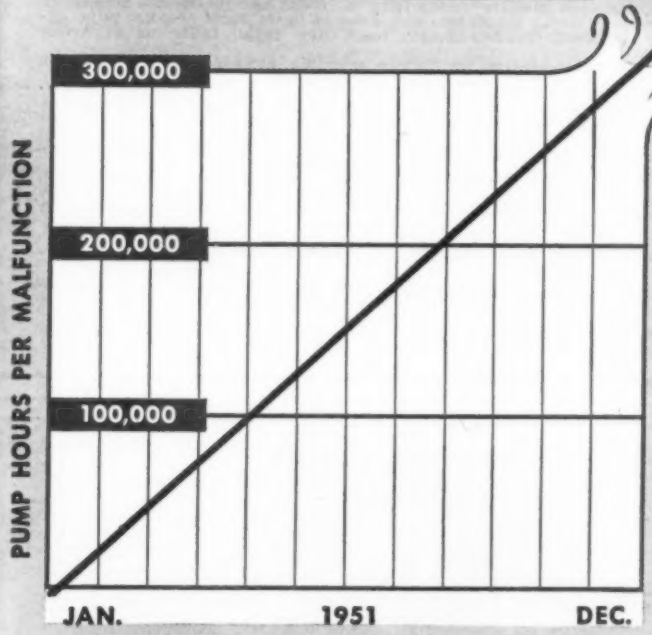
Carl D. Crew
Los Angeles Airways
Los Angeles, Cal.
September 22, 1948

Floyd M. Williams
American Airlines
at Los Angeles, Cal.
September 22, 1948

Candid snapshots from the famous collection of Kenneth

304,578 PUMP HOURS PER MALFUNCTION





There can be no question of the reliability and lasting qualities of Vickers equipment when it hangs up records like this. TWA maintenance records for 1951 indicate only one unscheduled removal of a Constellation cabin supercharger drive pump in a total of 304,578 pump hours.

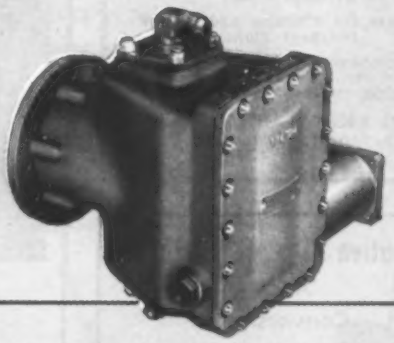
These TWA Constellations make use of numerous Vickers Hydraulic units. Besides variable displacement pumps (for main hydraulic system as well as cabin supercharger drive), there are hydraulic motors, pressure reducing valves, relief valves, unloading valves, and accumulators.

Vickers Hydraulic Equipment for aircraft is so widely preferred because it is compact, efficient, light weight . . . but above all dependable.

VICKERS

3000 psi VARIABLE DISPLACEMENT PUMPS

ON TWA CONSTELLATION CABIN SUPERCHARGER DRIVES



This is the reversible flow pump used in the Constellation supercharger drive, one of a wide variety of variable displacement piston type pumps available from Vickers. For further information write for new Bulletin A-5203.

VICKERS Incorporated

DIVISION OF THE SPERRY CORPORATION

1502 OAKMAN BLVD. • DETROIT 32, MICH.

4827

ENGINEERS AND BUILDERS OF OIL HYDRAULIC EQUIPMENT SINCE 1921

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Undisplayed Advertising: $1.00 per line, minimum charge $4.00. Cash with order. Estimate 30 capital letters and spaces per line; 40 small lower-case letters and spaces per line. Add two lines if Box Number is included in lieu of advertiser's name and address.

Displayed Advertising: $10.00 per inch for less than 15 inches in one issue or in any 12-month period. For more than 15 inches, $8.50 per inch; more than 30 inches, $8.00; more than 60 inches, $7.50; more than 90 inches, $7.00; more than 120 inches, $6.50. Space units up to full pages accepted in this section for classified-type advertising.

Forms close 20 days preceding publication date. Address all correspondence to Classified Advertising Department, AMERICAN AVIATION PUBLICATIONS, 1025 Vermont Ave., N. W., Washington 5, D. C.

VICE-PRESIDENT for operation and maintenance by outstanding, fast-growing feeder air line. Furnish complete history of experience, personal data and a recent photograph. Reply Box 772, AMERICAN AVIATION Magazine, 1025 Vermont Ave., N. W., Washington 5, D. C.

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12D40-211 Propeller Hubs
12D40-211-6101A12 Complete Propeller Assys.
Also
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EXECUTIVE PERSONNEL NEEDED
SOUTHERN CALIFORNIA LOCATIONS

General Manager for Aircraft Components Manufacturing Plant.

General Manager for Aircraft Engine Overhaul Plant.

Manager for Airframe and Engine Overhaul Plant.

Send complete details of background, qualifications, previous positions held, and salary required.

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Washington 5, D. C.

Executive Aircraft Overhaul
AND
Conversion
Interiors, Radio Installations, Engine Changes and Engineering,
We can handle your job
TODAY
Engineering & Manufacturing Corp.
P. O. Box 479 Galveston, Texas

TENDER NOTICE

Sale of 70 Curtis Commando Aircraft and Spares

Director General (Supplies & Disposals), Ministry of Works, Production & Supply, Government of India, New Delhi, invites Tenders for the purchase of 70 Curtis Commando Aircraft, (comprising 52, C-46A and 18, C-46D Aircraft of the book value of about $14,240,000) and a lot of Spare Parts of book value approximately $4,820,000. Tenders should reach New Delhi, India, on or **before 11 July, 1952.**

The Aircraft are located in the former American Army Airfield at Panagarh, India, and the Spares in Titaghur, near Calcutta, India.

The Aircraft have been inspected by Col. William Ray, of Messrs. Servisair (U.S.A.) and a copy of Servisair's report will be provided **without commitment.** It is believed that a large number of Aircraft can be reactivated, but the Government of India does not give any guarantee in this regard. Sales will be on "as is, where is" basis and subject to the conditions set out in the Tender form.

Inspection facilities will be given on application.

Tenders should be in the prescribed form. Full sets of Tender documents, with instructions to Tenderers, General and Special Conditions of Contract and a copy of Col. William Ray of Servisair's report on the condition of each of the Aircraft may be had on Payment of $4.00 per set from:

Accounts Officer, India Supply Mission
635 F Street, N. W., Washington, D. C.

Consul General for India in New York
3 East 64th Street, New York

The Government of India reserves the right to reject any or all Tenders without assigning reasons.

Lockheed Lodestar with Custom Interior

New Plane Guarantee—Test time only since complete major overhaul.
Full equipment. Immediate delivery—with Crew, if desired.

For Details:

STONNEL & HOLLADAY
International Terminal, Washington National Airport
Washington, D. C.
Phone: STerling 5753

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Aircraft Tool Design
AND
Manufacture

We have available capacity

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Engineering & Manufacturing Corp.

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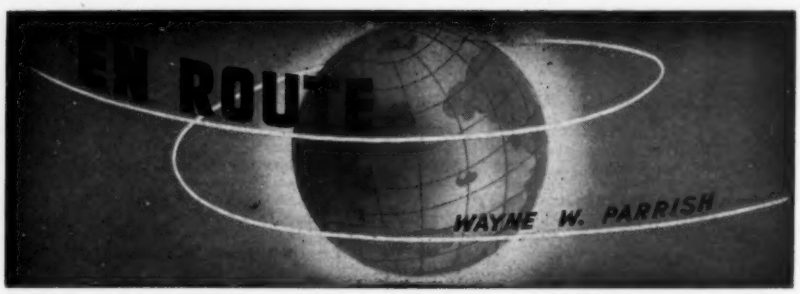

Just Tourists. When TWA invited me to go to Paris on its first tourist flight May 1, I got to thinking that my wife and I hadn't had a real vacation, i.e., a vacation without any aviation connection or shop talk, for quite a few years.

So I called **Tom Bell** in TWA's Washington office and made a proposition. If I bought a tourist ticket for my wife, could she travel with me in the plane carrying the press people. Tom said he'd let me know. In a few days he reported that everything was fixed up. Paying customers and press people were sharing the first tourist flight and we could travel together.

So for the first time in ages I got excited about the prospect of an actual tourist vacation. As everybody knows, I travel a lot, but I'm always going somewhere with an aviation objective. This time there would be no aircraft factories, no airline offices or bases, and no shop talk.

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Into the Country. Now that I'm back I can assure you it was a wonderful experience. I can rave about the music from the great organ at Chartres Cathedral, I can quote you the price of pastry and hot chocolate in *patisseries* from Poitiers to St. Jean-Pied-du-Port, I can rattle off names of some wonderful regional wines, and I can tell you how to drive through those tiny villages with the pint-size streets. In 2500 miles of driving I learned a lot about *la belle France* I never knew before and which you can't learn sitting at a sidewalk cafe on the Champs Elysees, delightful as that can be.

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Getting A Car. I've driven *in* cars many times in Europe, but I've never taken a car on my own and planned my own itinerary. Since my wife still remembered enough French from early school days in Paris I figured she could get me out of tight language spots and translate the menus so I wouldn't starve to death. My own French is pretty spotty, which is being a little overgenerous at that.

It took from Thursday night arrival in Paris until Tuesday morning to get out on the road, but I had to learn the hard way. There are three ways of taking a motor tour. One is to ship your own car to Europe and why anyone would want to do this I don't know because it isn't just the high expense, it's the fact that American cars are too big for driving on the interesting back roads. And they use up a lot of gas and oil, and if you're on a tourist budget you'll find out quickly in the game that gas comes a little high in Europe. It runs about 65 cents to 70 cents a U. S. gallon.

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Buy & Sell. Next method is to buy a car in Europe and re-sell it on leaving. I almost made a deal with Pacific Motor Sales in Paris for buying a British Consul (Ford), an inexpensive little car that is economical on gas and quite okey for ordinary traveling. But unless you are going to do an awful lot of driving over a period of a month or more, buying a car may work out to your disadvantage. You not only have all of the responsibilities of being a car owner, but the re-sale market may be in a lull just when you're in a hurry to return to the U. S. and you may not get the best price.

For an extended trip—buy the car. But for just a carefree vacation of a few weeks without trying to cover all of Europe, and being able to turn the car back to the renting agency with a very minimum of trouble, my recommendation is very strongly for renting. I found it to be extremely simple.

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Rent Your Car. My deal was with Europcars, located in Paris, and with an office in New York at 60 East 42nd Street. Europcars is a very reliable outfit and you can't say the same for every one of the car renting agencies now flourishing in Europe. All you need is an international driver's license, obtainable quickly in Paris if you have your own driver's license with you, and either credit arrangements or a deposit for the car, then sign one piece of paper which covers insurance and everything, and off you go. The whole deal can be made in ten minutes or less. There are many U. S. travel firms such as A. A. A., American Express, etc., which also have car renting deals, but these are much more expensive than the one you can make direct with an agency such as Europcars. I'll give you costs later.

Of course it all depends on what kind of car you want. There are French, British, German and American cars available and you can be sure that the American cars are *tres cher* which my dictionary says means "very dear" and I am not referring to love. But some of the cars are too small for the average American comfort although they are fabulously economical on gas and are okey if your budget is tight. I'm thinking of the Renault and the German Volkswagon, both of which have a hard time puffing up a steep hill.

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Plucky Vedette. There are some good English cars such as the Consul and the Austin, but you might not find parts easily available if you're off the beaten track, although I will say that almost any fair sized town would be equipped. Then there are such French cars as the Citroen, but American drivers might find learning to drive these cars a little annoying and you don't save on gas with them. There are two French cars I would recommend; one is the Peugot, on the small side, and the Vedette, which is a French Ford. Europcars handles only the Vedette. It is operated exactly like an American car, has pretty good baggage space, is small but not tiny, and has enough power to click down a main road at 60 or 70 mph if you want to go that fast.

For two solid weeks I drove the Vedette through all kinds of terrain and even over some pretty high mountain passes in the Pyrenees. It isn't as comfortable as an American car—no European car is—but it got me in and out of places where a large car would be extremely difficult to operate and I got to like the little jalopy so much I really felt sad when I turned it back to Europcars in Paris. It's a sturdy little bus. The only thing that happened on the whole trip was that the fan belt broke 60 miles outside of Paris on returning but I had this repaired in 30 minutes. The Vedette is a popular car in France and serviced easily anywhere.

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Good Roads. The French drive on the right side of the road, as we do in the U. S., and the highways and roads are extremely well marked. It's almost impossible to get lost if you have a good map put out by the *Guide Michelin*. The roads are in magnificent condition. In 2500 miles I never hit a rough spot anywhere. Even the small roads are maintained very well.

But the driving in Paris! Oo la la, as they say. I thought I was a hot-shot driver at home, but Paris traffic makes me dizzy if I'm doing the driving. There is one universal rule in France, especially in Paris, which takes a little time to get adjusted to. That rule is a simple one—the car to your right *always* has the right of way unless you are on a main highway in the country. Best advice is to wear a patch over your left eye and only look out for traffic to the right. No matter what speed, what other conditions—the guy on the right has the right of way. Period and double period. It is a rule more adhered to than any single traffic regulation in the U. S.

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Watch the Sheep. When **Roger Blitz** brought my Vedette around to the Windsor Hotel in Paris he said he would drive us out of town. I was much relieved. On the road to Versailles he got out at the edge of the city and turned the car over to me. This is a good service of Europcars. For people skeptical of their ability to drive in Paris, Europcars will send a man 30 or 40 miles outside the city either going or coming. Paris traffic is chaotic, although it follows a somewhat orderly pattern if you watch it closely. Outside of Paris the driving is easy if you watch out for bicycles, motorcycles, ox-drawn carts, flocks of sheep, the mobile meat store and similar unique features of the French roadside.

Around the World

European Firms Build British Jets

TWELVE manufacturers in eight European countries are producing British-designed jet fighters and engines under license, according to the Society of British Aircraft Constructors. Tooling up is over and production lines are rolling, in most cases.

Involved are Belgium, France, Holland, Italy (NATO members), Sweden and Switzerland. Plan is to build interchangeable parts so that components from one factory can be used to speed production at others, if need be.

Comet To Make Tokyo Test Run

A 9,000-mile Comet jetliner test flight from London to Tokyo has been scheduled by British Overseas Airways for sometime in July. It is estimated that the actual flying time will be 17 hours, not counting refueling stops.

It is also anticipated that the Comets will be making regular trans-Atlantic flights taking five hours, in about two years, according to Sir Miles Thomas, BOAC's chairman of the board.

ICAO Cuts Budget, Stays In Montreal

A 1953 budget of $2,817,167, or $17,027 under 1952, has been adopted by the Assembly of the International Civil Aviation Organization. Cost is apportioned among 57 members, with U. S. bearing the largest share (27% or $760,000), followed by United Kingdom (9% or $250,000), France (5.7% or $161,000), Canada (5% or $139,000). Figures are in Canadian dollars.

A Portuguese proposal that the ICAO Council study other possible headquarters sites was turned down by the Assembly. Canada has offered, subject to Parliament's approval, to reduce rent on ICAO's Montreal headquarters by $130,000 yearly.

Next year's Assembly, a major one to review technical, economic, and legal work, will be held outside of Montreal. France and United Kingdom have offered to play host.

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TRANSPORT

Surface transportation and berth charges were acted upon by the Composite and Joint Traffic Conferences of IATA, meeting at Buenos Aires. It was voted that surface transportation costs should be shifted from the carriers to passengers, beginning October 1, and a standard surcharge of $35 per night for berth accommodations was established.

British European Airways expects to be out of the red and onto a sound, profitable basis by fiscal 1954-55, according to Peter Masefield, chief executive. Fleet integration costs and the recent aviation gasoline shortage may make it impossible for BEA to wipe out its cumulative deficit any sooner. Introduction of two major new transport types, the Vickers Viscount and the Airspeed Ambassador, was described by Masefield as an expense that would pave the way for future profits.

British Overseas Airways Corp. has received the last of five Constellations modified to accommodate 68 passengers in a 3-and-2 seating configuration for Atlantic coach service. Work was done by Lockheed Aircraft Service, which also installed a new galley with centralized switches and electric ovens, additional emergency exists, Stratos cabin superchargers, and a new public address system.

Trans-Australia Airlines has what it claims is the first Convair-Liner in the world to complete 10,000 hours of flying time. Delivered to TAA in September, 1948, the Convair has flown more than 2,000,000 miles, carried 150,000 passengers, and averaged nine flying hours per day.

Trans World Airlines will fly and maintain five Bristol Wayfarers for Saudi Arabian Airlines, according to the terms of a contract recently signed with the Saudi Arabian government. The Bristols were formerly operated by Misrair under contract.

Aoki Aviation Company, Tokyo, is ready to start an air taxi service in Japan using three Cessna 170B's. These aircraft, which will be delivered this month, are believed to be the first civil light planes bought in Japan since the war.

Qantas Empire Airways' first proving flight on the direct Australia-South Africa service via the Cocos Islands and Mauritius will be made July 25, with the first scheduled flight from Sydney set for September 1. Constellation equipment will be used.

Societa Internazionale per Transporti Aerei, a new independent owner, has been organized in Milan with 50% Italian and 50% British capitalization. Company has taken delivery on one of three Fiat G-212 three-engine transports on order.

Asociacion de Companias Aereas, a new association, is being formed in Spain, with membership open to Spanish carriers as well as to foreign lines serving that country.

Sabena Belgian Airlines has increased the number of seats in its European system DC-3's from 21 to 26.

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MANUFACTURING

Societe Nationale de Constructions Aeronautiques du Sud-Ouest has announced the SO.60C, a twin-jet medium transport. Principle jet units (Atar, Avon, or Sapphire) are supplemented by small auxiliary jets to provide the flexibility and security of a four-engine aircraft with the economy of a twin-engine model.

Supersonic version of the Dassault Mystere jet interceptor is reportedly near completion. First flights are scheduled before next winter.

Bristol Proteus III turboprop engine, according to heretofore undisclosed information, is to have a power output of 4,000 horsepower, with augmentation jet thrust of 920 pounds.

News At Deadline

Carriers Study Newark Restrictions

Newark Airport, despite its reopening to commercial use at 12:01 a.m., June 16, saw no rush by airlines to return. Timing of the announcement by the Port of New York Authority caught airlines by surprise, and it was expected that it would take about ten days for carriers to analyze the restrictions under which the field was reopened and to decide which schedules should be shifted back from Idlewild and other fields.

Board Questions CAI's Merger Motives

CAB, in a strongly-worded letter to Colonial Airlines last week, hit at the line's solicitation of merger bids from ten airlines and indicated Colonial may be more interested in the purchase price for the sale of its assets than in the public interest aspects. Letter was from CAB Chairman Donald W. Nyrop to CAI president Branch T. Dykes and emphasized CAB's interest in a Colonial-National merger.

Bids solicited by Colonial are due June 26. On the preceding day, CAB will begin procedural steps with a prehearing conference in its investigation to determine if a Colonial-National merger would be in the public interest.

IMATA Head Resigns

O. Roy Chalk has resigned as president of Independent Military Air Transport Association following a members' 19-17 vote to elect a president from outside the operating membership.

A retired military official is being sought to head the group, which is composed of non-scheduled airlines and certificated cargo carriers who do business with the military. Chalk, president of Trans Caribbean Air Cargo Lines, remains on the board of directors. Howard Korth is heading IMATA pending election of a new president. Ben Edwards remains as executive director.

ACC Airport Action Due

Views of the members of the Air Coordinating Committee on the President's Airport Commission report will be revealed June 26, when each member will voice his opinion on how best to put the recommendations into effect.

Mid-West Sells Craft; Seven DC-3's to Go

Mid-West Airlines, which stopped operations May 15 following CAB's refusal to renew its certificate, has sold one of the 10 DC-3's purchased from Eastern Air Lines, and will sell seven more. MWA also sold its six Cessna 190's to Walston Aviation, East Alton, Ill., Cessna distributor.

Purdue Research Foundation, owner of the local service line, will handle sale of the DC-3's. Two of the 10 planes will be retained by Purdue University for pilot training in air transportation courses, replacing two Lockheed 10-A's, which will be sold.

Delivery has been taken on three of the DC-3's and one has been sold to Remmert-Werner Inc., St. Louis aircraft overhaul and sales firm. The remainder will be delivered during the summer. Cost is about $35,000 each.

MWA has also disposed of all other physical property which, together with the Cessnas, brought about $49,000. The company is now awaiting final mail pay settlement from CAB.

U. S. to Buy Military Aircraft from Europe

The United States is ready to buy complete military aircraft from European manufacturers, according to a Mutual Security Agency spokesman in Paris. Negotiations are under way in several countries to speed production of jet fighters.

The Pentagon refused to comment on the report directly, but indicated that even if it were true it would set no precedent, since the U.S. is already buying Canadair versions of the F-86, the T-33, the T-36, and the L-20.

TWA Mediation Fails

The wage dispute between Trans World Airlines and the Flight Engineers Association International has moved into the 30-day cooling-off period required by the Railway Labor Act before strike action can begin. Latest step in the dispute came after the FEAI rejected an offer of mediation from the Mediation Board. Reportedly at issue is the engineers' demand for 65% of flight captain's pay.

Wiggins Certificate Not Renewed

CAB Examiner R. Vernon Radcliffe has recommended denial of E. W. Wiggins Airways' application for renewal of its local service airlines certificate. Radcliffe said renewal is not required by the public convenience and necessity. His "initial decision" was to become effective in ten days unless exceptions were filed in the meantime.

More TWA Stock For Hughes Tool

Hughes Tool Company has purchased an additional seven and one half percent of the common stock of Trans World Airlines, increasing its total holdings to 1,987,938 common shares, or about 77% of the total of 2,670,646 outstanding shares. The new shares, it is reported by the SEC, total 204,110.

Supreme Court Advice Asked on "3-and-8"

The advice of the Supreme Court has been sought on the CAB's controversial "three-and-eight" regulation designed to limit the operations of non-scheduled airlines. The U.S. Court of Appeals for the District of Columbia Circuit has requested an advisory opinion on the proposed regulation, and will await such instruction before rendering a decision of its own. The appelate court is currently considering CAB objections to an injunction issued by District Court Judge Walter Bastian at the request of two non-scheduled airlines, as a result of which the proposed regulation was prevented from becoming effective.

Hendrickson Resigns

D. G. ("Del") Hendrickson, vice president-operations of Wisconsin Central Airlines, has resigned his post effective June 30 to engage in the marine electronic business. No successor has been named.

Passes 100 Hour Test

The experimental model of the Piper Twin Stinson has passed the 100 hour mark as flight test work progresses on schedule. Although production is not slated until 1953, work has been started on two additional twin Stinsons.

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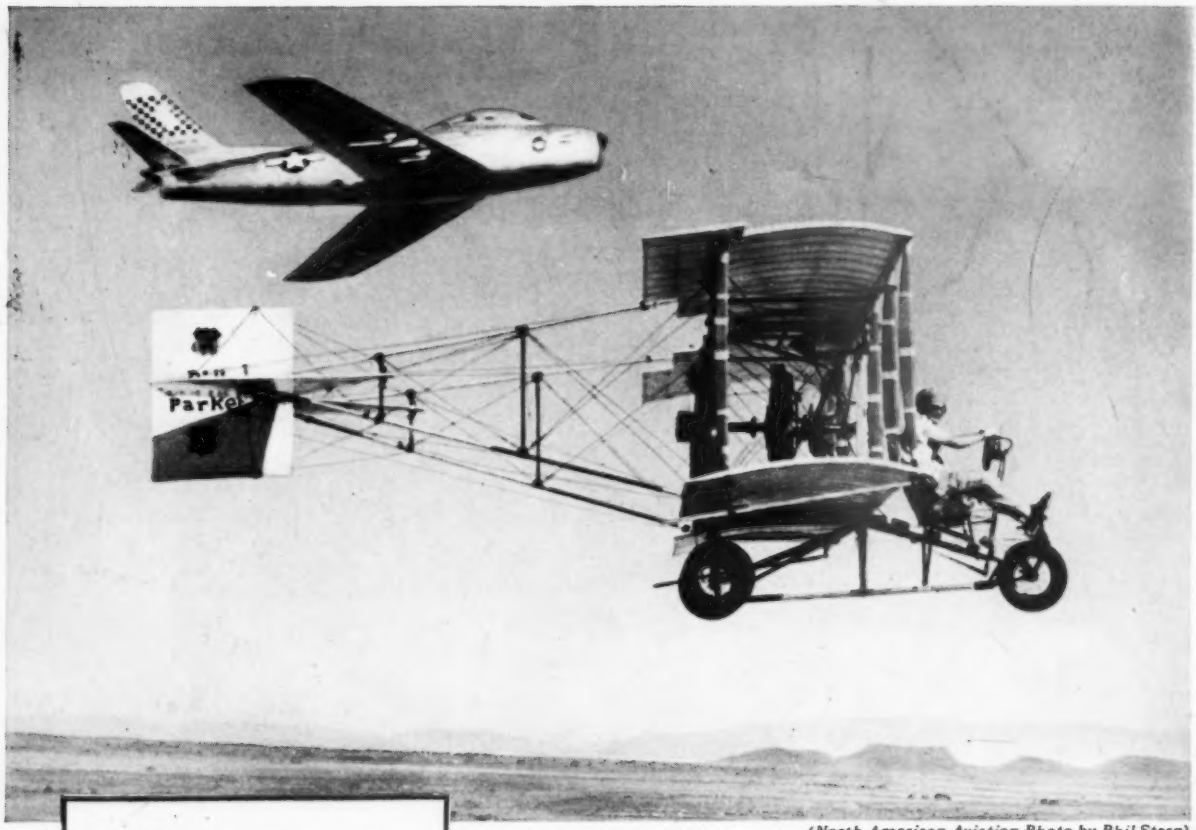

(North American Aviation Photo by Phil Stern)

Billy Parker

. . . flight pioneer and president of the "Early Birds", skims smoothly along in his antique pusher plane over Luke Field, Arizona. An F-86 Sabre Jet whistles close by, providing dramatic photographic evidence of aviation's progress through the years.

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